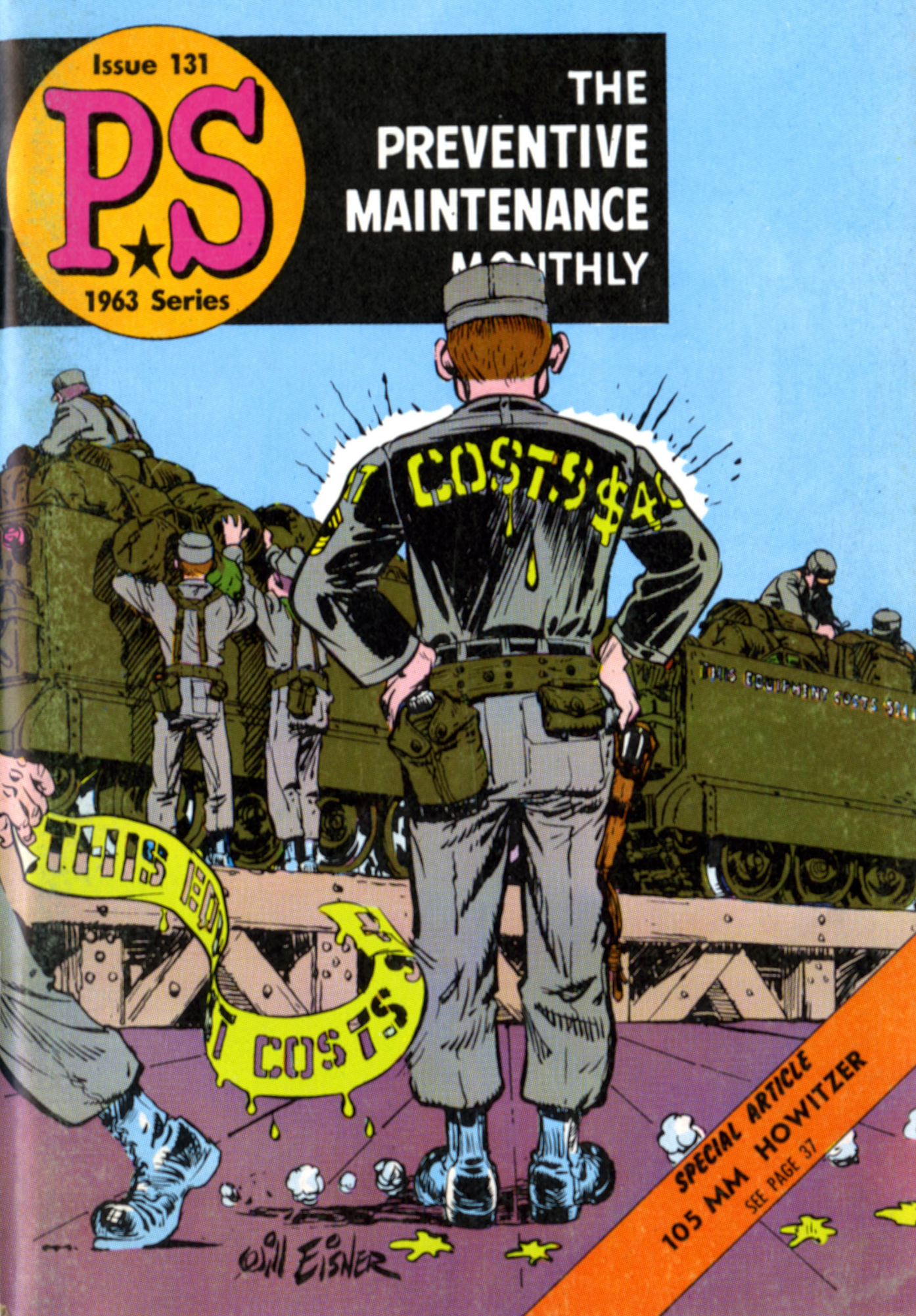
Issue 131
PS
1963 Series
THE PREVENTIVE MAINTENANCE MONTHLY
COSTS $4
THIS EQUIPMENT COSTS $14
THIS EQ
T COSTS
SPECIAL ARTICLE
105 MM HOWITZER
SEE PAGE 37
Will Eisner

IF THE CLOUD GOES

"When the first shot's fired, it's too late to learn maintenance."

Connie Rodd

If and when the first mushroom cloud goes up, there's going to be one big, mad scramble.

An awful lot of people are going to try to learn a lot of things, real fast, they "didn't have time for" when all was quiet and peaceful. These are the characters who use the "M1 pencil" on the range, or who give their equipment the "checking pox" when it comes to doing and recording maintenance, or who steal a "cat-nap" during real important training. You know the kind.

But you'd never let that happen. Because you know that piece of equipment you baby today will take care of you tomorrow.

Knowing how—be it how to fight, drive, operate or maintain—takes a lot of time and effort by the man who's going to have to do it. And you have to learn and practice **now.** *Let it slide till the first shot's fired . . . and you could go up with the next one.*

Are you and your equipment ready for the first shot?

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THE **PREVENTIVE MAINTENANCE** MONTHLY Issue No. 131 1963 Series

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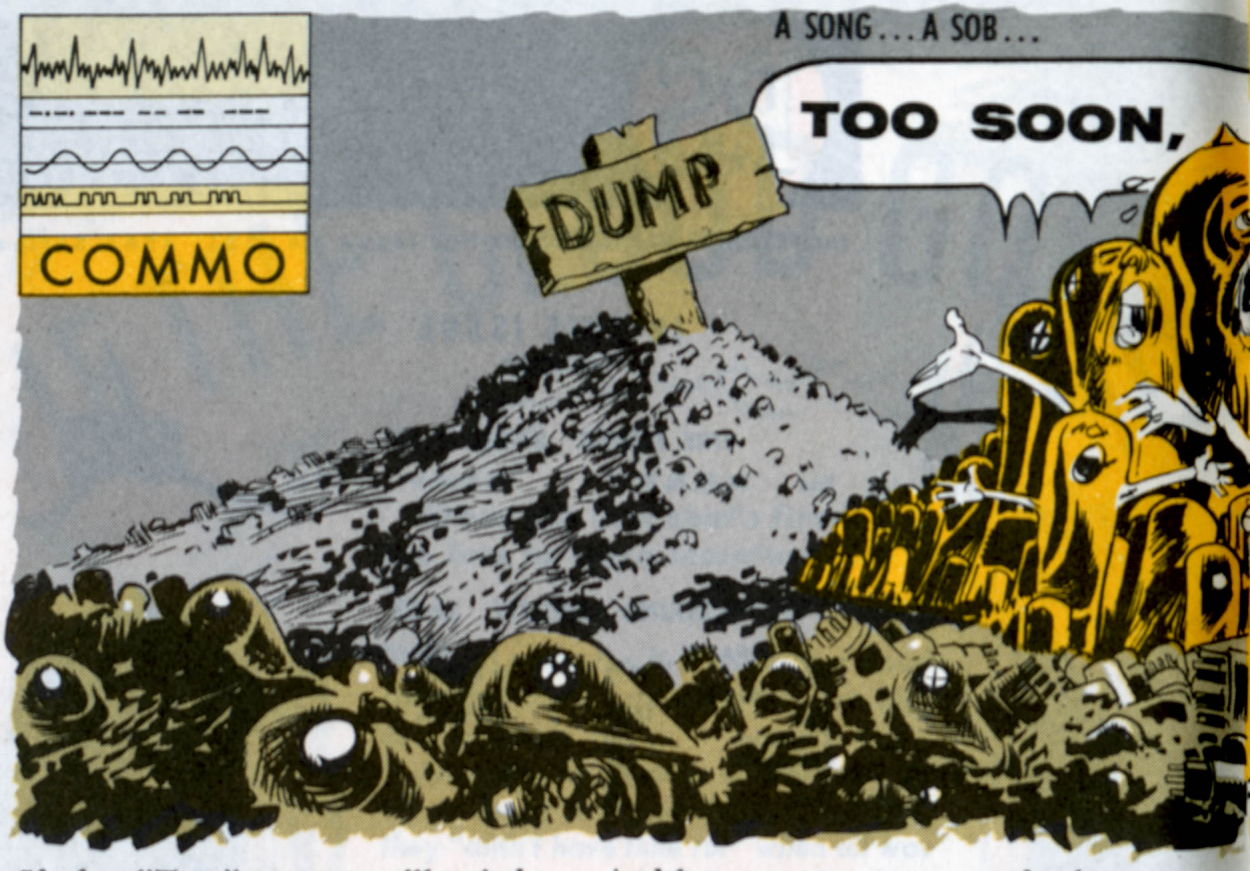

If after "Taps" on some still, windless night you half-heard the whisper of a seemingly sourceless symphony of sad, sub-human sound, maybe you forgot to turn off the radio or TV.

And maybe you didn't.

Maybe what you heard was the full-moon wail of countless electron tubes humming and harmonizing in weird frequency—responding slave-like to a master impulse that fingers their filaments even as they lie heaped and piled in random discard.

One out of every three electron tubes tossed away in this man's army is still perfectly capable of doing its job.

No wonder then that an occasional electronic wail of protest is heard across the land as these highly sensitive, responsive and vocal tubes bemoan their untimely end.

And how come so many good tubes get tossed away? Poor tube replacement practices mostly, like so:

"TESTING" GAS TUBES

A lot of gas tubes are discarded when they fail to test out on a tube tester. But the only real test of a gas-filled tube is when it's in the equipment under operating conditions! You should never dump a gas tube unless it fails to do its job in the equipment. You just can't trust the tube tester reading.

FLUORESCENCE EFFECT

Many tubes are rejected as "gassy" because there may be an off color glow. But in most cases this glow is due to bulb fluorescence, which does not affect the performance of the tube.

But how do you tell the difference between bulb fluorescence and the glow of a "gassy" tube?

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Bulb fluorescence is very light blue in color. It is caused by stray electrons bombarding the inner surface of the bulb. The glow, or color, appears only on the inner surface of the glass envelope.

You may run across this glow in such electron tube types as 1B3, 6AK5, 6AQ5, 6B4, 6CB6, 5763 and 5842. Just remember, this type of glow in no way affects the ability of the tube to do its job.

Now the glow of a "gassy" tube is identified by a blue-violet color. The glow appears between the tube elements and it's caused by electrons striking the gas molecules in the tube. If you have a tube with a lot of gas in it, these electrons hitting the gas molecules could result in too high a grid current. But the only way you can know for sure is by trying the tube in the equipment.

REPLACING "OLD" TUBES

Many perfectly good tubes are yanked after they rack up a certain number of hours on the theory that they're just about ready to burn out "any ol' how." But the fact is, a tube that's been doing a good job in a circuit will be just as dependable in that circuit for an indefinite period as a brand new tube. So the rule here is, never

MORE

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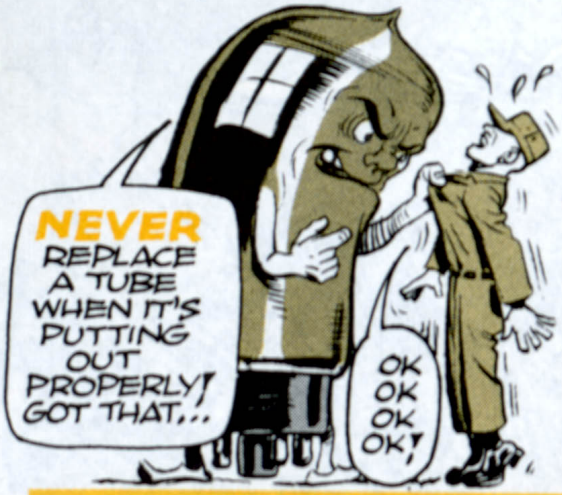
25 MORE

substitute a new tube for an old one that's still puttin' out like a pro.



NOT USING "MARGINAL" TUBES

Along the same lines, a heap of new tubes are tossed out when they just barely meet the standards on a tube tester. So why take a chance, you say, and reach for another new tube. Well, again, the real proof of the tube is in its performance **on the job.** That barely marginal tube could turn out to be the most reliable and faithful performer in your electronic harem. All it may need is a chance to get in there and go, man, go.

"WHOLESALE" REPLACEMENT

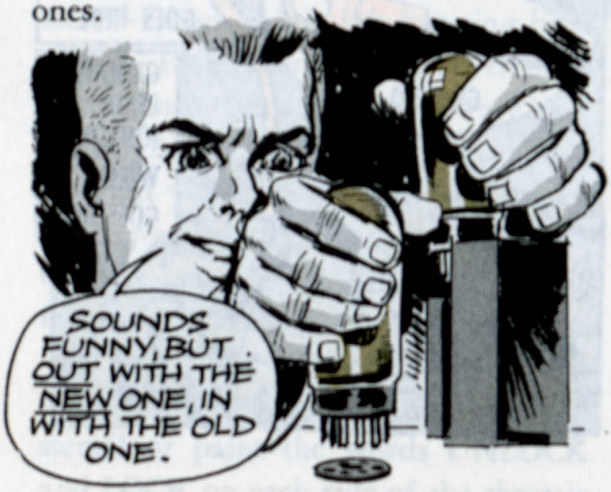
Probably the biggest reason that tubes are retired too early is the practice of replacing a number of tubes at one time in an attempt to correct a situation caused by just one faulty tube. This really racks up the tubes—in a number of ways.

What you should do is replace one tube at a time and then see if the equipment operates. If it doesn't, then replace the new tube with the original one. You keep doing this until the equipment operates. In most cases you'll find the trouble was caused by just one tube —which you toss out, leaving in just the one new tube.

But maybe more than one tube is shot. So, you insert new tubes, testing after each insertion, but leaving the new tube in. When the equipment starts operating, you then leave in the last new tube—but you start backtracking on all the other new tubes you put in.

One by one you put back an old tube for a new one, testing the equipment each time. If the equipment operates

with the old tube in, then you leave it in. You go right on down the line, old one for new one, until you locate the other old tube that fails to keep the equipment operating when you turn it back on. This way, instead of three or four tubes being discarded, you end up with only one or two really bad ones.



FAILING TO REPLACE ORIGINALS

OK, OK. But suppose you've withdrawn and inserted, plucked and pushed until you're shaking like a leaf and the equipment still doesn't operate. Then the trouble must not be with the tubes, and all the original tubes should go back into the equipment before it goes off to support.

One of the really big reasons for the waste of tubes is the practice of slipping in—and leaving in—new tubes even though they don't correct the problem. You aren't doing either yourself, your equipment, Uncle Sam or your maintenance support any favor by loading up the equipment with new tubes before you send it back.

The real trouble may lie with a tilted dunce-cap—or something like that—and those half-dozen good tubes you replaced will never get a chance to perform, except in the electronic chorus.

It just seems to be one of those mysterious facts of life that while everybody is eager to shove a new tube in, there's a universal reluctance about pulling it out again. While on the other hand, everybody is willing to pluck a good old tube, but nobody seems to want to re-insert it. So down the drain go a lot of good tubes with hardly enough hours on 'em to break 'em in right.

ONE OUT OF THREE . . .

One out of every three electron tubes tossed away in this man's army is still perfectly capable of doing its job. And the ingenious passion for performance of a tube is such that it will seek even the odd outlet of a moonlight wail to breathe out the last syllable of its electronic life.

So if after "Taps" on some still, windless night . . .

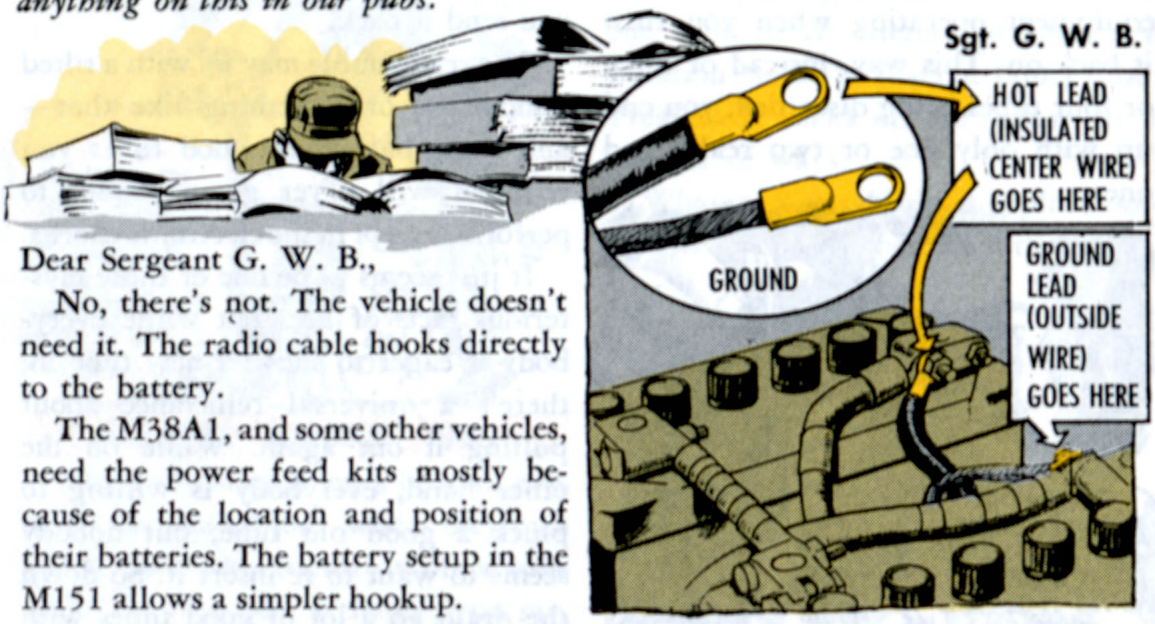
END

M151's COMMO JUICE FEED

Dear Half-Mast,

Is there a radio power feed kit for the new M151 ¼-ton? We can't find anything on this in our pubs.

Sgt. G. W. B.



Dear Sergeant G. W. B.,

No, there's not. The vehicle doesn't need it. The radio cable hooks directly to the battery.

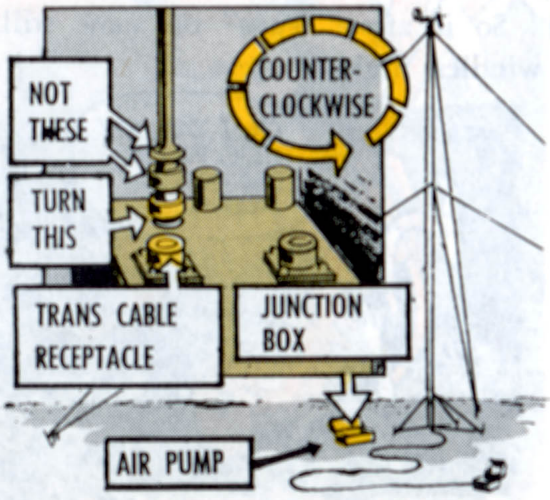
The M38A1, and some other vehicles, need the power feed kits mostly because of the location and position of their batteries. The battery setup in the M151 allows a simpler hookup.

Half-Mast

A COUPLA SECONDS

A coupla' seconds of unscrewing on the transmission cable (CX-4552) of the AN/PMQ-6 wind measuring set can mess you up somethin' fierce . . . if you unscrew the wrong thing.

The connector head of the cable which goes to the receptacle of the air pump junction box can be unscrewed at three spots. The spot you want is just about flush against the junction box. Turn the connector counterclockwise to get it off.



The easiest way is to rest your thumb and forefinger against the junction box, press against the connector, and unscrew it. Grabbin' the rear part of the connector, or twistin' the cable, will strip the wires right off their contacts —and maybe damage the receptacle, too.

It's easy enough to make the mistake, specially when workin' in the dark, so let your sense of touch help you out. It'll keep the cable out of the repair shop, and the wind you'll be measurin' won't be the yells of Ol' Sarge.

TO THE RIGHT TILL TIGHT

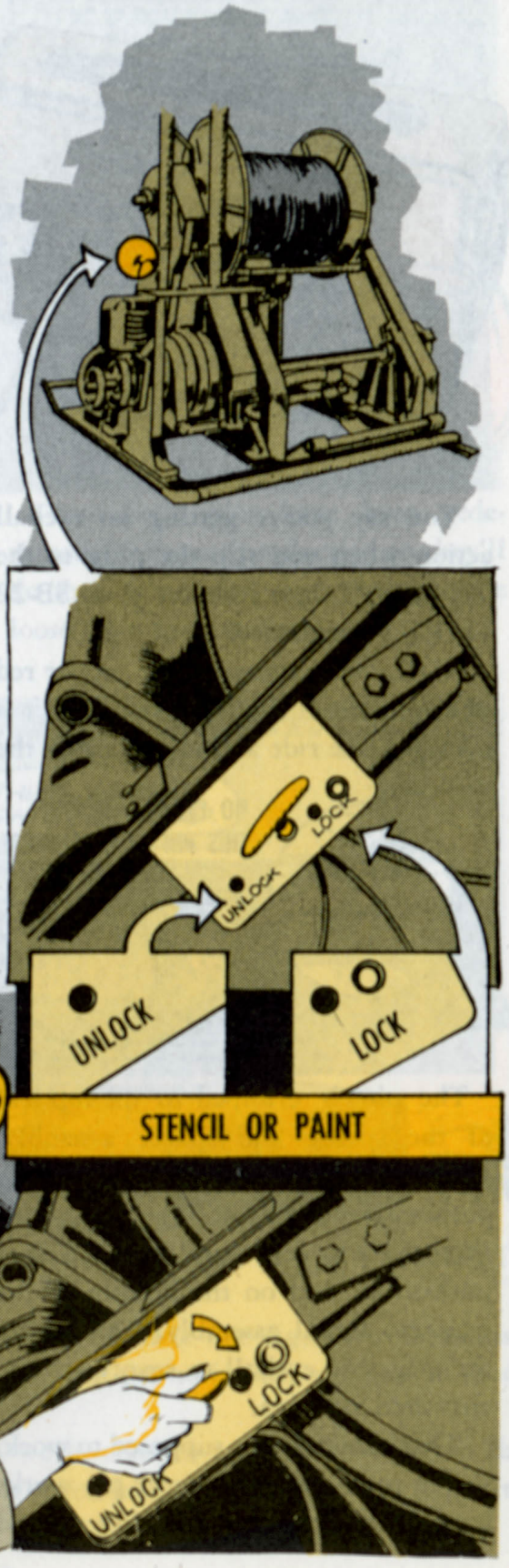
You twist it to the left . . . and then you give it a little pull . . . and then you twist it to the right . . . and then you start all over again.

And before you know it, the carburetor throttle control handle on your RL-26-E reel unit is left hanging by a thread. From there on in, its chances of remaining with the unit for very long are mighty slim.

What you've gotta do is to remember to snug up that handle when you're through operating the reel—so it won't fall off, or get snagged and broken.

To help you remember which way to turn the handle, it's a good idea to stencil or paint the words UNLOCK and LOCK on each side of the throttle stem, using white lacquer paint. UNLOCK goes to the lower left of the stem as you face the throttle control. LOCK goes to the lower right.

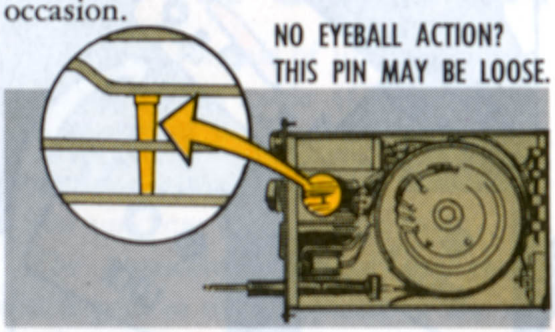
To secure the handle after an operation, turn it clockwise toward the LOCK position until it's snug.



FOR NON-FOCUSING EYEBALLS

You say you're getting no eyeball action when you slip the plug to the TA-222/PT line jack on your SB-22 ( )/PT switchboard?

Well, the chances are the upper red phenolic pin in the J201 jack circuit is taking a free ride and not rising to the occasion.

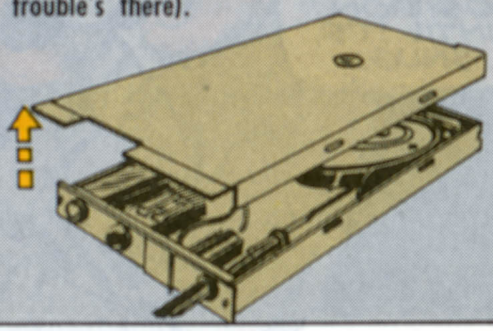


The pin is crimped to the top leaf of the spring and spacer assembly. When the plug is inserted, the plug pushes against the pin—the pin in turn lifts the top leaf—and the top leaf pushes the stud on the bottom of the magneto signal assembly. This causes the magnetic eyeball to revolve to the answered position.

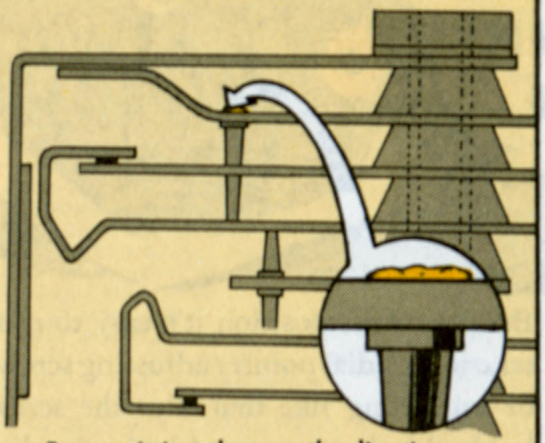
That's the way it's supposed to work. But in some cases the upper pin works loose from its anchor and slips up and down in the anchor hole without putting any pressure on the upper leaf. Result: No visual signal or eyeball action.

The thing that's needed to make this little pin shoulder its responsibilities is a drop or two of this new-fangled epoxy glue that comes in two separate containers. There're different brands on the market and the chances are you can pick up a package at your country store or other local-purchase supply channel. You may not be able to get it at some remote overseas stations. The important thing is that it be the two-container type of epoxy material that will really do a holding action.

First you slip the cover off the TA-222/PT line jack (or the TA-326/PT trunk jack, if the trouble's there).



If the red phenolic pin (in Jack 201 or J501) has come loose and is slipping through the upper leaf, you need the glue.



Prepare it just the way the directions say. Put a drop or two on the end of the pin where it extends through the top leaf of the jack. **Just be mighty careful and don't let any of the epoxy mixture get on the electrical contact surfaces.**

These little pins have been redesigned for future production so they'll do their lifting job even if they come loose from their anchor.

Next chance you get, take a look at the order number on the TA-222/PT line jacks for your SB-22( ) switchboard.

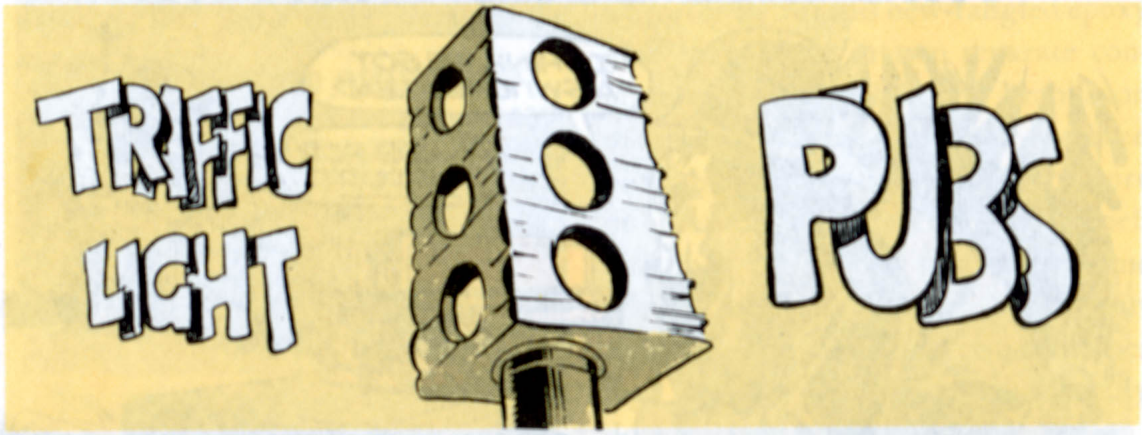
Some of the jacks with Order No. 22599-PC-60 have line signal terminations No. 1 and No. 2 reversed. Which means you can get no indicator signal on that line.

If you do have a line jack that doesn't work, chances are you have one with that order number. Since it may be a switched lead problem, get your support unit to check the terminals for you.

Oh, it's mighty tempting all right. You've got your trusty ol' screwdriver in your hand and suddenly you spot this little ol' slot staring you in the eye and you have an overwhelming urge to slip in the tip and see if it's as tight as it should be.

But don't do it! That slotted screw beneath the dial window of your Receiver R-174/GRR-5 is not for turning. Because of its position it's easy to mistake it for a dial pointer adjusting screw, or something like that. But the screw holds the shutter assembly in the dial window and once it's loosened, the whole front panel has to come off before it can be tightened again.

And that's too big a price to pay for a casual twist of the wrist. Right?



Here's the latest list of Equipment Serviceability Criteria TB's and TM changes. Get yours today (or order it on DA Form 17) and make sure your equipment is combat-ready.

TECHNICAL MANUAL CHANGES

C1 3-4230-200-12, Decon Appar, P. D. M3A3.
C1 5-1013, Grader, Road MTZD Warco 4D-100.
C3 5-1041, Grader, Road, DED, 12,100-14,300 Mdl 118.
C1 5-1043, Grader, Road, DED, Mdl 402.
C2 5-1940-200-12, Boat, Bridge Erec, Inbd.
C4 5-2410-202-10, Tractor, Ft, Cater HOD D-6 D-318.
C2 5-2510-200-15, Trk, Stake, Bridge Trans, 5 ton, All Mdls.
C2 5-2805-200-15, Outboard Motor Gas 25 BHP, Mdl G35912.
C3 5-3805-200-15, Loader, Scoop Type, Clark 175 A-M, MOD JT.
C6 5-3805-207-15, Loader, Scoop Type, Clark 85 A-M.
C3 5-3805-210-10, Grader, Road, DED, 12,100-14,300 Mdl 4D.
C2 5-3805-210-10, Grader, MTZD Huber-Warco 4D.
C4 5-3805-211-10, Grader, Road, 7400-8400 lb Pres at Blade, 10 ft blade, Air Trans.
C3 5-3805-219-15, Loader, Scoop Type, Hough H-90-M.
C3 5-3810-207-10, Crane-Shovel, 20T, Quickway M200.
C2 5-3810-220-15, Crane Shvl, Whl Mtd, 7 ton, ½ cu yd, 4x4 Airb.
C1 5-3810-228-10, Crane-Shovel, Trk Mtd, 20 ton, ¾ cu yd Quickway M202.
C2 5-4210-200-10, Fire Fighting Equip Set, Trk Htd, Class 530-B, Overseas.
C3 5-4310-204-15, Compr, Recipro Leroi-Westinghouse 1BYCH-33.
C3 5-4310-207-10, Compr, Rotary, Harris J-210-FED.
C2 5-4310-210-15, Compr, Recipro, 5 CFM, 115PSI, Mdl G-321.
C2 5-4310-216-15, Compr, 5 CFM, 175PSI Champ Pneu, Mdl OEG-34-60-ENG.

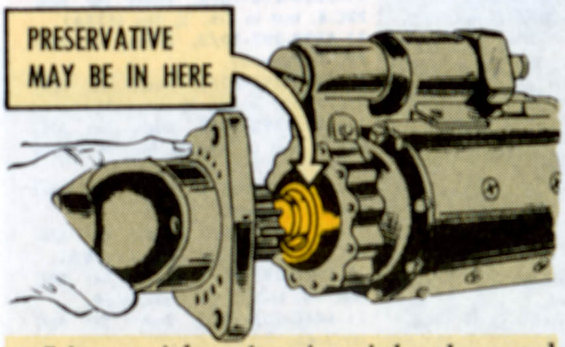
C3 5-4310-220-10, Pneu Tool and Compr Outfit, 210 CFM, Trk Mtd.
C2 5-4310-229-10, Compr, 210 CFM, Davey M210-RP.
C1 5-4320-220-15, Pump, Ctfg Barnes 10-MG.
C2 5-4610-202-12, Water Purif Equip Set, 600 GPH, Trlr Mtd, Diatomite Filter.
C2 5-4930-201-10, Lub & Serv Unit, 15 CFM, GED, Lub Stor Tank.
C2 5-4930-202-12, Lub & Serv Unit, 15 CFM, GED, Lub Stor Tank.
C1 5-5031, Gen Set, 5KW, 120V Mdl CE51DC & CE51D/WK2.
C1 5-5051, Gen Set, 5KW, 120-208V AC, Onan Mdl 5ABG-4M.
C1 5-5076, Gen Set, 5KW, 120-208V, Mdl 5-US-10285-A.
C1 5-5077, Gen Set 1.5KW 120V Homelite 24A120-23A.
C1 5-5127, Compr, 5 CFM Amer Brake Shoe G-321-B.
C1 5-5260, Gen Set, Ptble, 10KW 120-208V Hol CE-100-AC/WK4.
C1 5-5263, Gen Set, 5KW, 120-208V, Mdl CE-52-AC & CE-52-AC/WK2.
C1 5-5343, Compr, Recipro, 105 CFM, 100 PSI.
C2 5-6115-200-10, Gen Set, 3KW, 120-208V AC, Mdl JHGW3A.
C3 5-6115-204-10, Gen, 10KW, 60 cycle, 120V, Mdl GGC-10-AC-2.
C2 5-6115-206-10, Gen Set, 15KW AC-DC 120V Homelite 15AD12-16.
C2 5-6115-212-10, Gen, 1.5KW, 28V, DC.
C3 5-6115-226-10, Gen Set, 1.5KW, 28V DC, Mdl G-1528-2AO16.
C2 5-6115-231-15, Gen Set, 9.5KW, 120V AC, Mdl G-0536-1AO8-1.
C3 5-6115-232-10, Gen, 10KW, 60 cycle, 120V, Mdl CE-105-AC/WK8.
C2 5-6115-244-10, Gen, 10KW, 60 cycle, 120V, Mdl PM 59-010-1.
C2 5-6115-256-15, Gen Set, 1.5KW, 120V AC, Mdl SG-1500.
C4 5-6115-269-10, Gen Set, 10KW, 120V, Mdl CE 106AC/WK9.
C2 5-6115-295-15, Gen Set 3KWDC 28V Kurz & Root GAMA-1.
C1 5-6665-201-12, Mine Detector AN/PRS-3 Series.
C3 10-606B, Trk, Fork, Gas 6000 lb, 24 in Load Ctr, 168 in lift, Pneu tired.
C5 10-1115, Pumping Assy, Flam Liq, Bulk Tran, GED, 225 GPM.
C4 10-1125, Pumping Assy, Flam Liq, Bulk Tran, GED, 50 GPM.
C2 10-1607A, Trk, Fork, Gas 15,000 lb, 24 in Load Ctr, 210 in lift, Pneu tired.
C1 10-4930-204-10, Tank and Pump Unit.
C6 11-263, AN/GRC-9, AN/GRC-87 and AN/VRC-34.
C8 11-284, AN/GRC-3 thru 8.
C4 11-287, AN/VRQ-1, -2, -3.
C3 11-291, AN/VRC-13, -15.
C3 11-642, AN/VRC-20, -21.
C4 11-706, AN/VIA-4.
C6 11-900A, PE-75AF.
C1 11-971, PE-162.
C2 11-976A, PU-26A/U.
C6 11-1338, AN/FPN-33 and AN/FPN-40.
C4 11-2139-10, AN/TCC-7.
C3 11-2142, AN/TCC-3.
C3 11-2258, AN/TXC-1.
C6 11-2436, AN/TMQ-5.
C5 11-5805-202-15, AN/MTC-3.
C4 11-5805-246-10, TH-5/TG.
C2 11-5805-247-10, TA-182/U.
C1 11-5805-254-15, AN/TCC-14.
C6 11-5815-204-10, AN/GRC-46 and AN/VRC-29.
C5 11-5815-205-15, AN/MGC-17.
C5 11-5815-206-12, AN/PGC-1.
C4 11-5820-203-15, AN/MRC-54(V).
C4 11-5820-204-15, AN/MRC-69(V).
C5 11-5820-222-10, AN/VRC-24.
C2 11-5820-256-10, AN/GRC-26.
C3 11-5820-295-10, AN/GRC-19.
C5 11-5840-217-10, AN/TPS-25.
C5 11-5840-220-10, AN/MPQ-29.
C2 11-5895-204-10, AN/TNS-3.
C6 11-5895-205-15, AN/MSC-29.
C2 11-6115-204-10, PU-286A/G, PU-286B/U.
C3 11-6660-206-10, AN/GMD-1.

TECHNICAL BULLETINS

9-1055-203-15/1, Heating and Tie-Down Unit 762MM Rocket Trk MTD.
9-1055-205-10/1, Rocket Launcher 762MM Trk MTD M386.
9-1055-208-12/1, Handling Unit 762MM Rkt Tlr M405, M405A1.
9-2300-203-12/4, Armored Personnel Carrier M59.
9-2300-203-12/5, Mortar 4.2-Inch SP FT M84.
9-2300-206-10/5, Trk 10 ton M125.
9-2300-216-10/1, Howitzer SP FT 8-Inch M110.
9-2300-224-10/2, Armored Personnel Carrier M113.
9-2320-208-10/1, Trk ¼ ton M38A1, M170.
9-2320-209-10/1, Trk 2½ ton M34, M47.
9-2320-209-10/2, Trk 2½ ton M35, M45, M46 Chassis.
9-2320-210-10/1, Trk 2½ ton M135.
9-2320-210-10/2, Trk 2½ ton M211, M217, M217C, M215, M220, M221.
9-2320-211-10/1, Trk 5 ton M54, M41.
9-2320-211-10/2, Trk 5 ton M62, M543.
9-2320-212-10/1, Trk ¾ ton M37, M37B1, M43.
9-2320-218-10/2, Trk ¼ ton M151.
9-2320-222-10/1, Recovery Veh Med M88.
9-2320-235-10/1, Trk, Cargo, 2½ ton, M35A1.
9-2320-235-10/1, Trk 2½ ton M35A1.
9-2350-201-12/2, Tank 76MM Gun M41, M41A1, M41A2, M41A3.
9-2350-203-10/1, Howitzer SP FT 155MM M44, M44A1.
9-2350-205-10/1, Tank 90MM Gun M48A1, M48A2.
9-2350-208-10/1, Tank 90MM Gun M48A2C.
9-2350-209-10/1, Howitzer LT SP FT 105MM M52, M52A1.
9-2350-210-12/1, Howitzer SP FT 8-Inch M55.
9-2350-215-10/2, Tank 105MM Gun M60, M60A1.
9-2350-224-10/1, Tank 90MM Gun M48A3.
11-284/1, Radio Set AN/GRC-4 Inst 90MM Gun Tank M48.
11-284/2, Radio Set AN/GRC-4, Inst in Car Pers, Full Trk, Arm M59.
11-284/3, Radio Set AN/GRC-3, Inst in 90MM Gun Tank M48.
11-284/4, Radio Set AN/GRC-3, Inst in Tank M41.
11-284/5, Radio Set AN/GRC-4, Inst in Tank M41.
11-284/6, Radio Set AN/GRC-3, Inst in Rec Veh M88.
11-284/7, Radio Set AN/GRC-3, Inst in Car Pers, M59.
11-285/1, Radio Set AN/VRC-7, Inst in Car Pers, M59.
11-286/1, Radio Set AN/VRC-8, Inst in Car Pers, M59.
11-286/2, Radio Set AN/VRC-9, Inst in Car Pers, M59.
11-291/1, Radio Set AN/VRC-13, Inst in Rec Veh M88.
11-291/2, Radio Set AN/VRC-13, Inst in Mortar 4.2 M84.
11-295/1, Receiving Set AN/GRR-5, Inst in Car Pers, M59.
11-296/1, Radio Set AN/PRC-6.
11-1510-201-20/1, Elec Equip Conf U-8D, RU-8D, and U-8F Acft.
11-1510-201-20/2, Elec Conf Inst in U-8D, RU-8D, and U-8F Acft.
11-1510-202-20/1, Elec Equip Conf O-1A, O-1E, TO-1A, TO-1D and TO-1E Acft.
11-1520-202-20/1, Electronic Equip in Army Mdl CH-34A and CH-34C Heli.
11-1520-203-20/1, Electronic Equip Config Army Mdl CH-37A and CH-37B Acft.
11-1520-205-20/1, Electronic Equip in Army Mdl CH-21C Heli.
11-1520-206-20/1, Electronic Equip in Army Mdl OH-23B, OH-23C and OH-23D Heli.
11-1520-207-20/1, Electronic Equip in Army Mdl UH-1A and UH-1B Heli.
11-2643/1, Intercom Set AN/UIC-1 Mtd in Trkd Veh.
11-5815-204-10/1, Teletypewriter AN/VRC-29 Inst in Car Pers, M59.
11-5815-256-10/1, AN/TGC-10.
11-5820-222-10/1, Radio Set AN/VRC-24, Inst in Car Pers, M59.
11-5820-222-10/2, Radio Set AN/VRC-24, Inst in Tank M41.
11-5820-222-10/3, Radio Set AN/VRC-24, Inst in Tank M48.
11-5820-292-10/1, Radio Set, AN/PRC-8 (Unmtd).
11-5820-292-10/2, Radio Set AN/PRC-8, Inst in Trk, ¼ ton M38A1.
11-5820-292-10/3, Radio Set AN/PRC-9 (Unmtd).
11-5820-292-10/4, Radio Set AN/PRC-9, Inst in Trk, ¼ ton M38A1.
11-5820-292-10/5, Radio Set AN/PRC-9, Inst in Trk, ¾ ton, M37 and M37B1.
11-5820-292-10/6, Radio Set AN/PRC-10 (Unmtd).
11-5820-292-10/7, Radio Set AN/PRC-10, Inst in Trk, ¼ ton M38A1.
11-5820-295-10/1, Radio Set AN/GRC-19, Inst in Car Pers, M59.
11-5840-208-10/2, Radar Set AN/MPQ-4A.
11-5840-211-12/1, Radar Set AN/PPS-4.
11-5840-229-15/1, Radar Sets AN/TPS-21 and AN/TPS-33.
11-6660-203-10/1, Wind Measuring Set AN/MMQ-1.

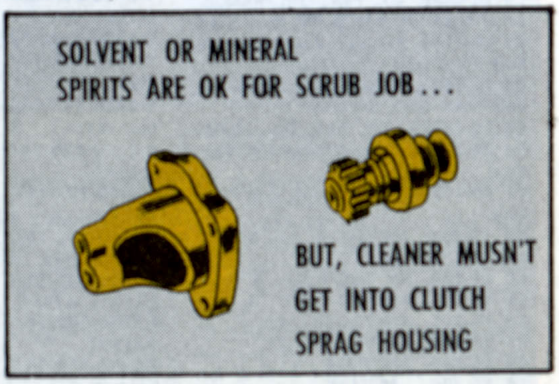
Waitin' for a new M60 tank starter? Check it carefully!

Some Delco-Remy starters that were packaged by Continental—FSN 2920-796-2616—for the M60 tank got the inside of their nose cones (starter-drive end-housings) covered with a heavy preservative when they were packaged. The molasses-like stuff **must be completely cleaned off** before the starter's installed.



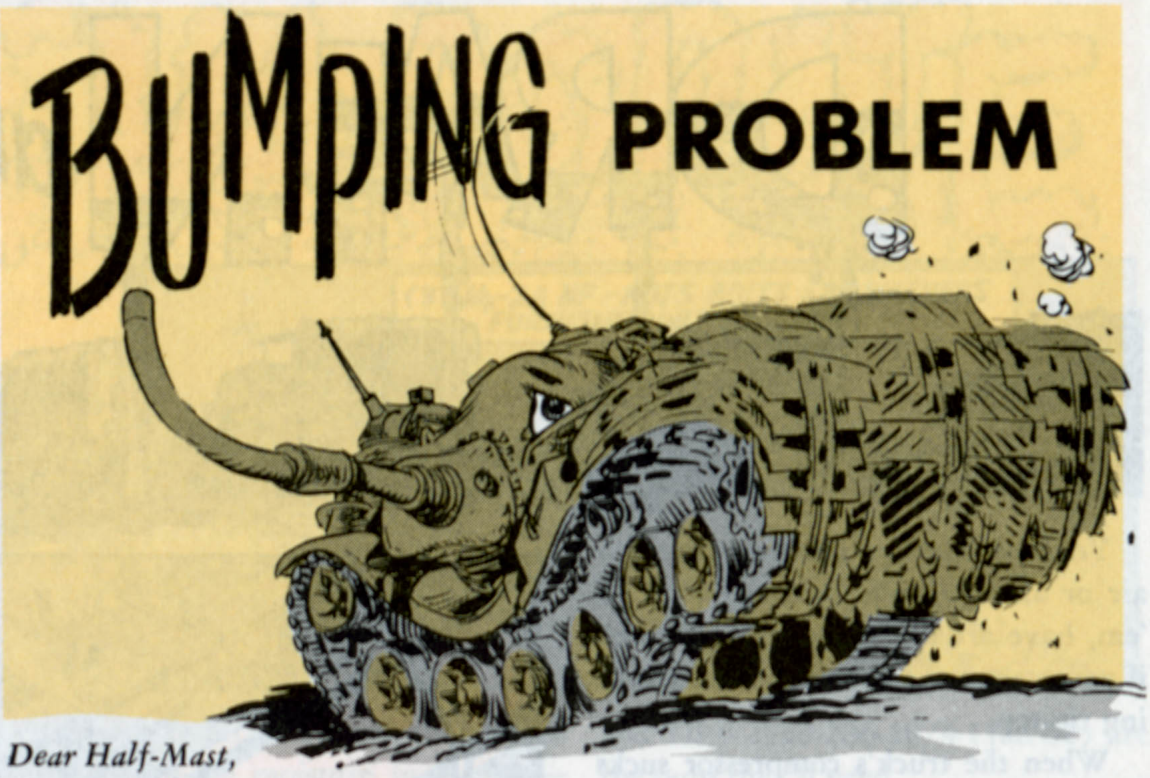
It's a tricky cleaning job, tho, and besides, the nose cone may have to be removed to get all the stuff out that may've gotten into the drive clutch assembly. So-o-o-o, best let your support outfit take over the cleaning chore 'cause they can do the disassembly job.

The cleaning job can be done with solvent or mineral spirits but it takes great care so's the cleaner doesn't get into the clutch sprag housing (which as you know is filled with special sealed-in lube).



After support cleans off the gooey coat and carefully re-lubes the starter clutch area (only), you can re-claim your M60 starter and install it like your TM says.

BUMPING PROBLEM



Dear Half-Mast,

We've got that old question of bump-starting to check for hydrostatic lock again—this time in the AVDS 1790-2 diesel engine in the M60 tank. It's said the main reason for not bump-starting this engine is that there's almost no chance for hydrostatic lock to happen.

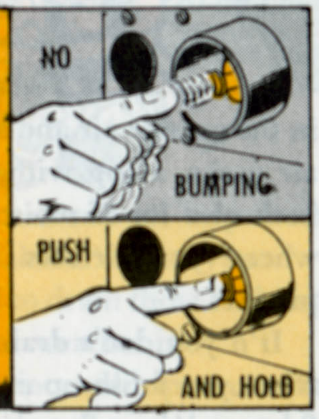
Some experts also say that if the 1790-2 engine stops on a compression stroke and you jab the starter button just as she's backing off the compression stroke, a backlash could happen that would damage the starter gear train. Other experts say it's impossible for such a backlash to happen.

Sgt. J. H. C.

Dear Sergeant J. H. C.,

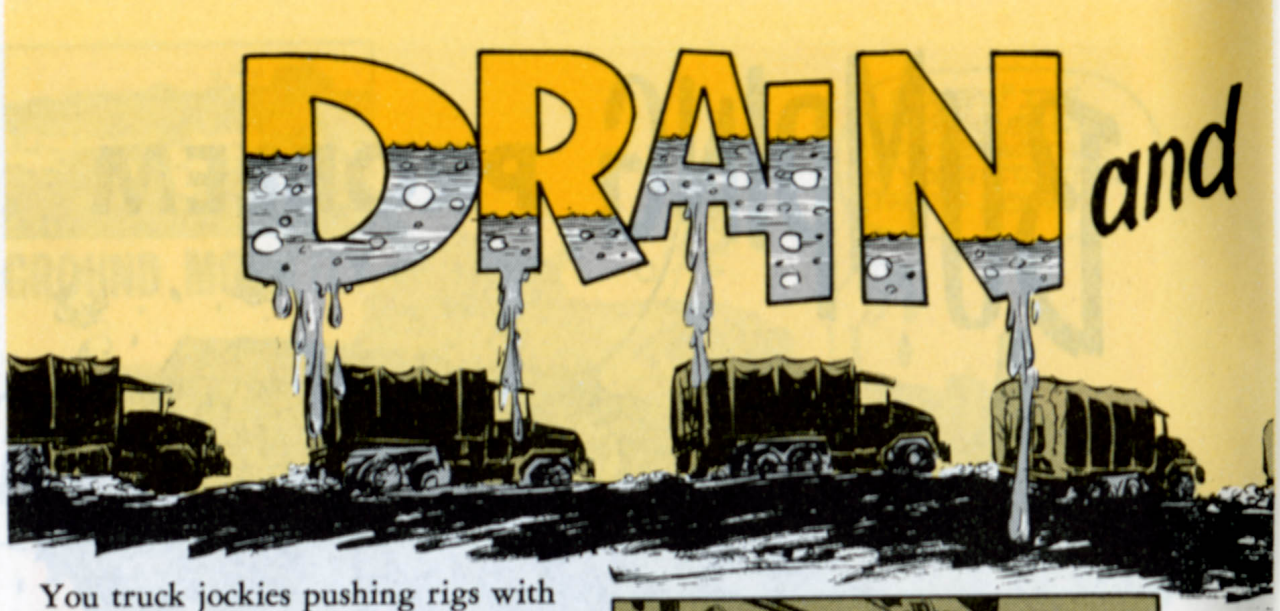
There are three good reasons for not bump-starting the 1790-2 engine.

1. There is practically no chance for hydrostatic lock in the engine, so checking for it by bump-starting is useless. You've probably noticed that TM 9-2350-215-10 (Sep 62) doesn't even mention hydrostatic lock.
2. If the engine stops on a compression stroke and the starter button is jabbed just as the engine is backing off the compression stroke, you could get a backlash. And that backlash could damage the starter gear train.
3. Bumping could cause enough arcing to the contacts in the starter solenoid and starter switch to burn them out.



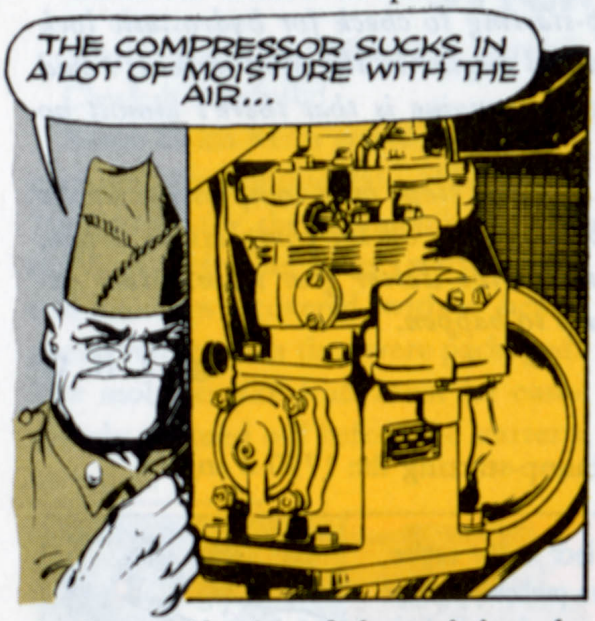
So the word on starting the 1790-2 engine in the M60 tank is: Push hard and hold. Don't bump.

Half-Mast



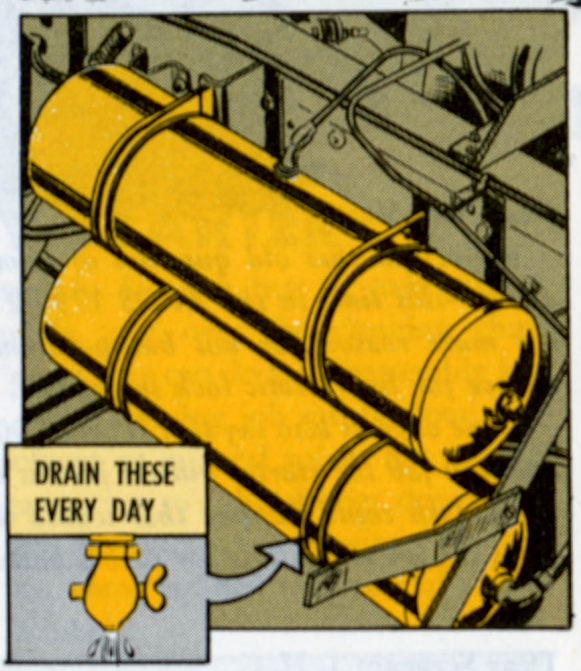
You truck jockies pushing rigs with air or air hydraulic brake systems in 'em, have a daily chore that's a must if you want to keep your brakes working tip-top.

When the truck's compressor sucks



in the outside air and shoves it into the air tanks, along with the air comes a heck of a lot of moisture—and this is where you drivers come into the picture.

If'n you don't drain those air tanks when you finish up every day or every 8-hours (in sub-zero areas), you're leaving the tanks wide open to ol' man



rust—and if it's cold enough the water can even freeze up in the air lines: No brakes!!

You can first tell if the drivers before you have skipped their duty to drain 'em, if you notice any slow-braking reaction.

As an assist when you're working in sub-zero weather, you'll find a gadget, Alcohol Evaporator Kit (FSN 2940-740-8773), was put into the system as a replacement item. (It's been around for years.) When she's hooked up to the

DRAIN and EVAPORATE

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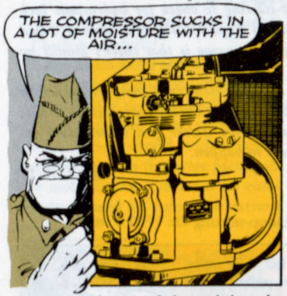

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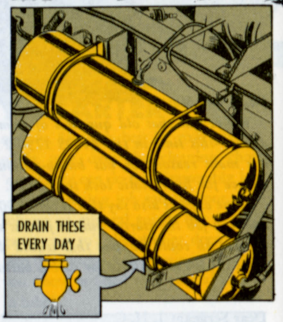

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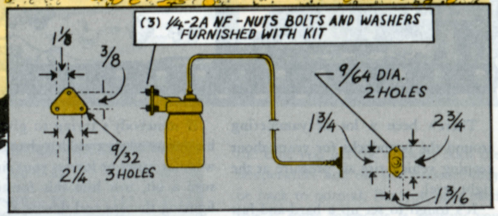


When they're hooked up, the bottle holder bracket usually is mounted to the radiator shroud or firewall. The other end is connected up either by removing the blanking plate on the end of the intake manifold on the compressor or by drilling an 11/32-in hole in the top of the air filter (screen) body and using a ⅛-in NPT size tap.

When you use the blanking plate spot, the adapter plate in the kit goes on in its place.

Your support unit'll have all the latest poop for the 10-ton, G792, trucks . . . MWO 9-2320-206-30/9 (Jan 62) and TB 9-2320-206-10/4 (Jan 62) are the pubs they'll need.

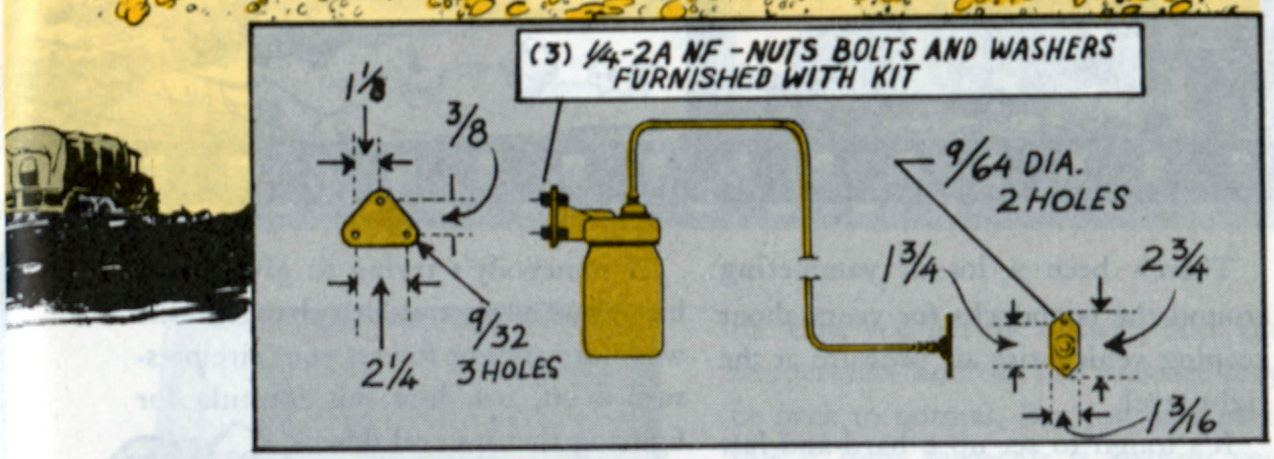
Installation instructions for power plant heater kits are in TB 9-2855-9 for 2½-ton G742 trucks, TB 9-2855-16 for 2½-ton G749 trucks, and TB 9-2855-19 for 5-ton G744 trucks.

To get most of this sub-zero equipment, all's needed is to meet the requirements (temperature range) you'll find in SB 9-16. Once the temperature mean range for your area has been figured, then you can call on help from support to requisition 'em for you.

Keep in mind to drain those tanks no matter what your weather is.

And if you're in a cold spot, use the evaporator kit when the need comes a-calling—keep its bottle full of alky.

EVAPORATE



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There's been a lot of yammering around the boondocks for years about keeping vehicle-tire air pressure at the right level.

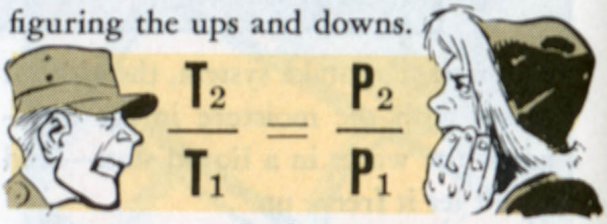
It's tough to set up a hard-and-fast rule to control it, 'cause air is a combination of gases that expand when heated, then shrink when they cool again.

That means you've got at least two things to consider when adjusting tire air pressure. One is the temperature of the weather. The other's the build-up of tire heat from friction when driving.

If you want to complicate things still more, there's the drop in outside air pressure because of altitude above sea level, but this one shouldn't bother you much.

Since pressure builds up as friction heats up the tire while traveling, it'll drop again as the tire cools off after travel. So you never bleed air just because tires seem to have a bit of excess pressure while still hot.

If somebody's trying to give you a hard time when a sudden change in the weather raises or lowers your tire pressure a bit, toss him this formula for figuring the ups and downs.



First, use absolute temperatures, which is done by figuring the temperature in degrees, beginning at absolute zero—which is 460 degrees below zero Fahrenheit (for example, +60° F would be 460 + 60). Divide the temperature after the drop (T_1) into the temperature before the drop (T_2—when the tire-pressure was gaged).

The answer you get equals P_2—sea-level air pressure (14.7 PSI) plus your original tire pressure, divided by P_1—sea-level air pressure plus tire pressure **now**.

Since the tire pressure **now** is what you're trying to find, call this X. If you started with a tire pressure of 45 PSI and the weather temperature at 60° F, but the weather's now down to 35° F, you fit these figures into the formula and get this mess o' mathematics:

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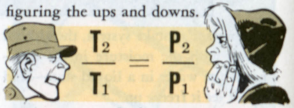

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$$\frac{460 + 60}{460 + 35} = \frac{14.7 + 45}{14.7 + X}$$

Solve it and you'll find your tire pressure has dropped to 42.1 PSI at 35 degrees.

The only hitch is the time it takes. By the time you get the answer, both the temperature and the tire pressure may be back to normal. But you may need this if some inspector is beating you over the head with a manual that says "tire pressure should be so-and-so" without considerations for altitude or weather temperature.

Skipping all the complicated formulas, here's a table that'll take most of the mystery out of the rise and fall of tire air pressure:

PSI Pressure Gage Reading at 60° F:	Will Drop, at 10° F, to:	Will Rise, at 110° F, to:
30	25.7	34.3
45	39.1	50.6
60	52.8	67.3
75	66.2	83.7
90	80	99.5

For pressures and temperatures in between these levels, you'll need to figure yourself a sliding scale. And, remember, these readings have to be made before travel . . . or after the same amount of travel.

F'instance, if you gage the tires before starting the vehicle in 60-degree weather, then gage 'em again after driving, pressure's likely to be up because of tire heat. And this may happen even when the weather's colder. So, make your readings under like conditions.

If you find the table's too complicated, here's a rule-of-thumb that's a fair substitute:

Pressure drops about 2.5 percent for each 10-degree drop in temperature. Likewise, it rises about the same percentage with each 10-degree rise in temperature. But keep a close watch on those decimal fractions.

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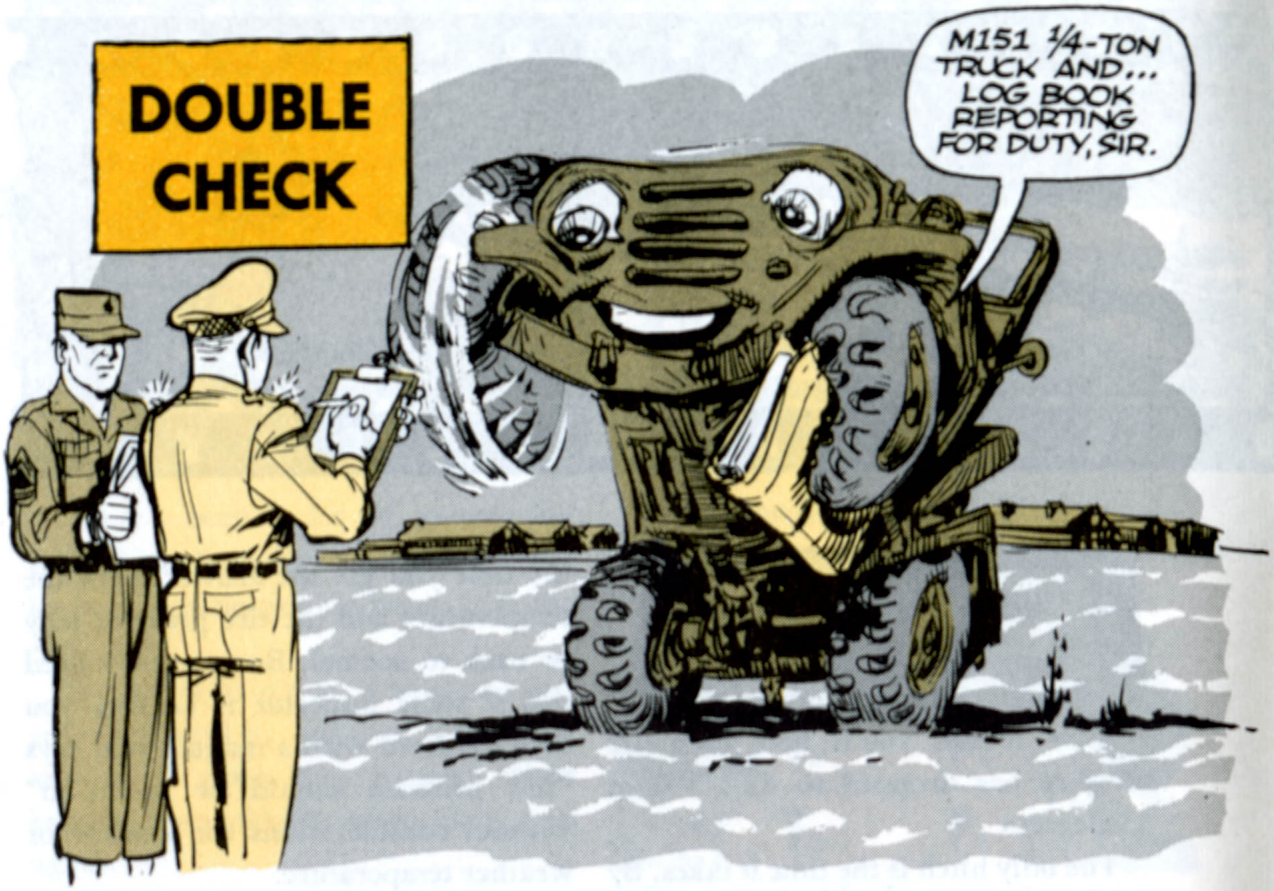
If you find the table's too complicated, here's a rule-of-thumb that's a fair substitute:

Pressure drops about 2.5 percent for each 10-degree drop in temperature. Likewise, it rises about the same percentage with each 10-degree rise in temperature. But keep a close watch on those decimal fractions.



Expecting an M151 ¼-ton truck to join your outfit soon?

Better make ready . . . 'cause whether you get a new, used or reconditioned jeep you're not to use it until you make sure it's been inspected, serviced and otherwise RFI'd (made ready for issue, that is).

And the quickest way to take care of that is to check the vehicle's log book record (DA Forms 2408-2, 2408-5, 2408-6, 2408-7, 2408-8). Those forms will tell you what people up the line did or didn't do for the vehicle before you got it.

If you find, for example, that the vehicle was issued without being lubed it'll be up to you to give it a complete lube job according to its LO (regardless of when it was last scheduled). Except, that is, for its gear cases and the engine . . . you don't have to service 'em. Just check their levels to see that they're OK.

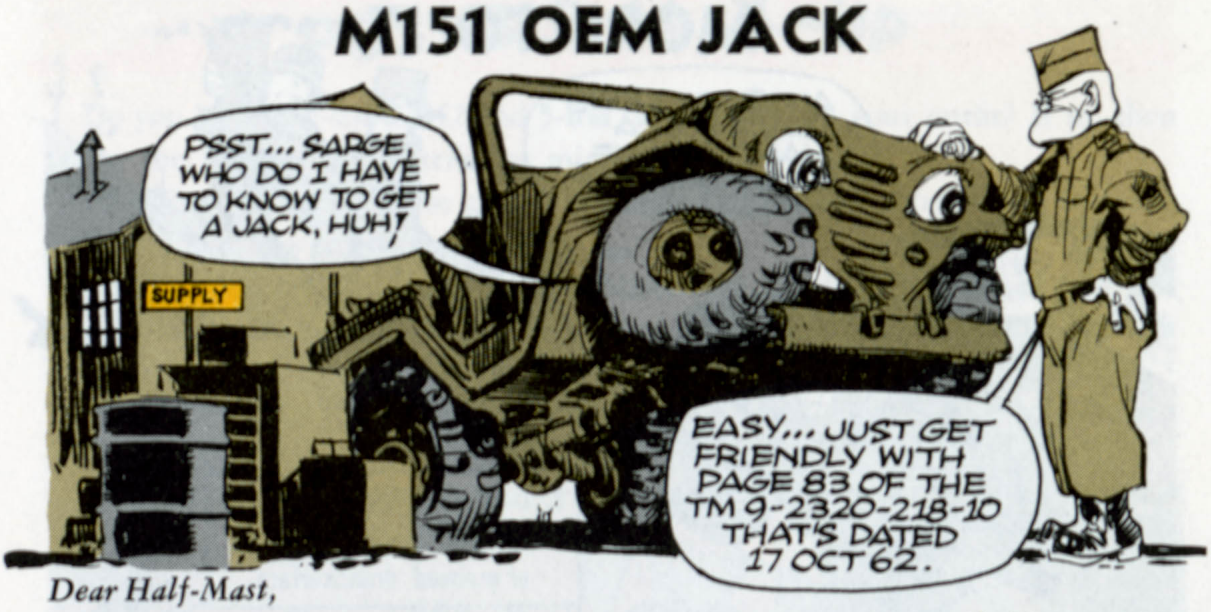
Also, if the vehicle's tagged to show the engine oil's OK for 500 miles (and if the oil's the right weight for your climate) all you have to do is check it; don't change it. But when the vehicle is listed on the maintenance roster (DA Form 2403) be sure a note's made calling the vehicle in for an oil change at 500 miles.

Change 1 (1 Mar 63) to TM 9-2320-218-10 (17 Oct 62) sets up this before-operation SOP.

SKIP THE Q'S

The TM change also deletes the Q (quarterly) service and puts the M151 on an S (semi-annual) or 3000-mile PM schedule.

M151 OEM JACK



Dear Half-Mast,

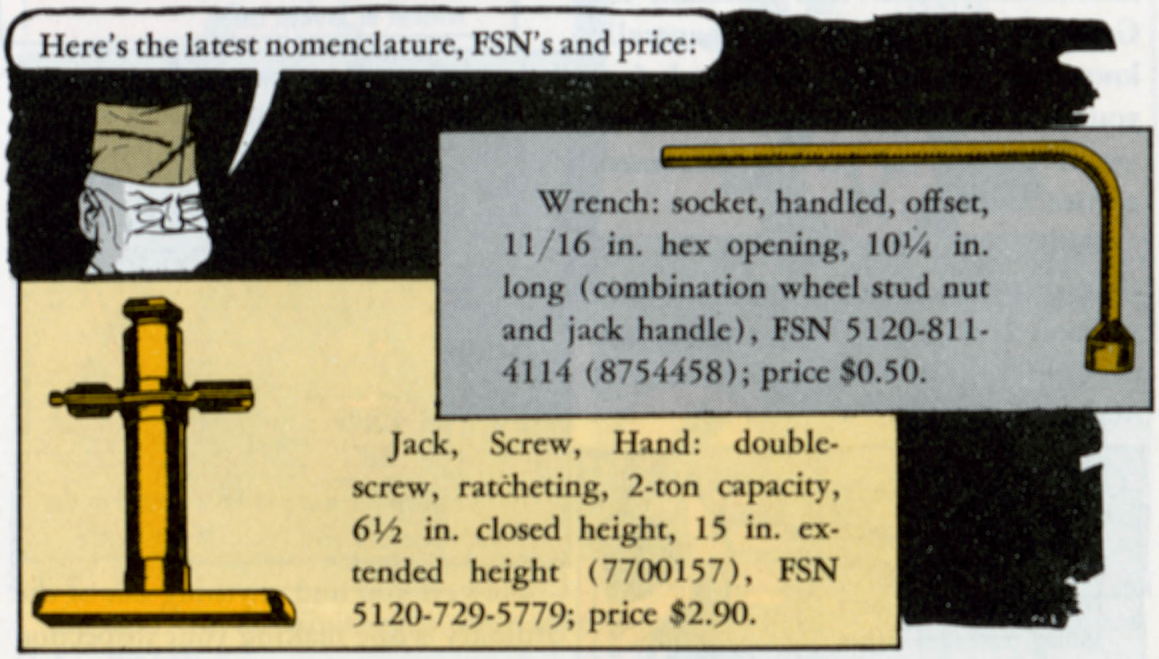
We need a jack to complete the OEM for our M151 ¼-ton truck. TM 9-2320-218-10 (18 May 60) lists the OEM for the M151 but it doesn't give any FSN for the jack. We requisitioned the jack by the nomenclature given in the TM but our DSU cancelled the requisition and kicked it back with the notation "cannot identify".

Our question is . . . how do we get a jack?

SFC T. B. O'D.

Dear Sergeant T.B. O'D.,

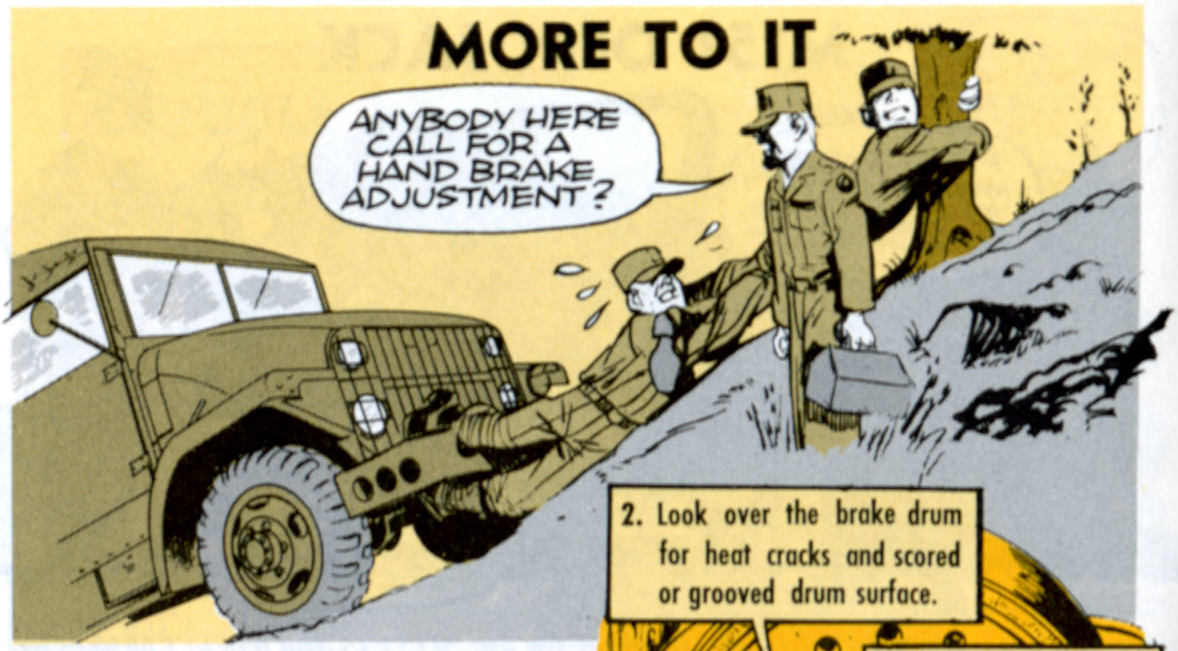
Your big problem is not having the latest TM. The FSN's for the jack and its handle are on page 83 of TM 9-2320-218-10 dated 17 Oct 62.



Try this on your 1546 and I'm sure you'll get your jack and handle.

Half-Mast

MORE TO IT

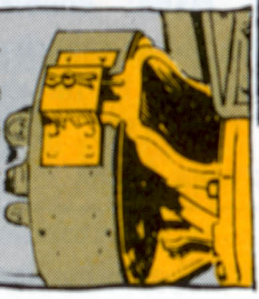


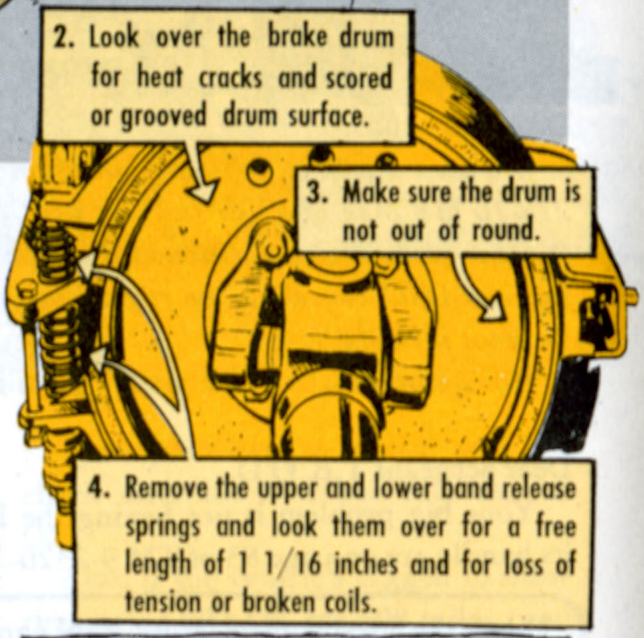
You always adjust the mechanical parking brake on your G749-series 2½-ton trucks when the hand lever needs more than three-quarters travel to hold your truck on a hill. And you make the adjustment as it's outlined in para 254 of TM 9-8024.

Naturally . . . this info is common knowledge around organizational maintenance yards that maintain the Gemmys. But what isn't generally known is what should be done before you start making the adjustment, so you'll be sure to get the clearances spelled out in the TM.

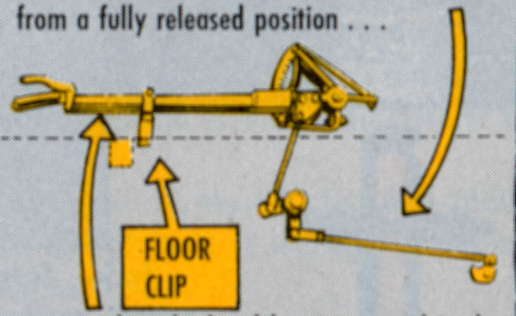
Before you start adjusting the mechanical brake, remove any packed mud or junk from around the anchor support bracket and adjusting screw; then make these checks:

1. Look over the anchor that attaches the brake band to the transfer case and see if it isn't loose, sprung, cracked or broken.





5. Last, look over the connecting linkage and see that it's not bent, sprung or in any other condition that'll keep the linkage from a fully released position . . .



. . . when the hand lever is seated in the cab floor clip.

Now, if you find anything out of the ordinary while making your inspection repair or replace any necessary items before going on with your adjustment.

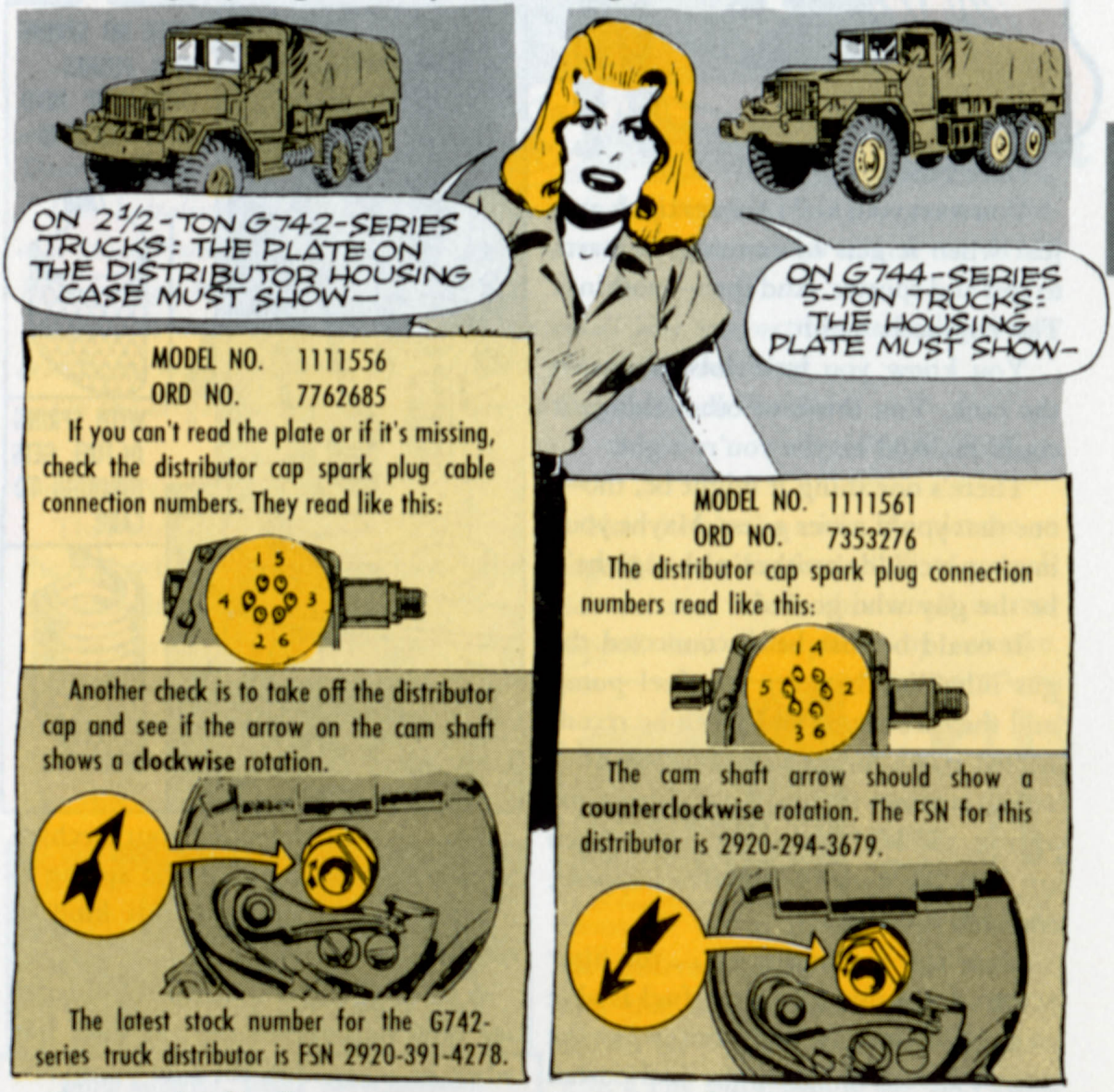
POSSIBLE MIX-UP

Do you have 2½-ton G742 and 5-ton G744 trucks in your outfit? If so, then be on the lookout for distributor mix-ups.

The distributors for these trucks are both Delco-Remy models and look the same . . . but they're not the same.

The distributors rotate in different directions. If they're switched and put in the wrong vehicle, you'll get no governor ignition advance; this'll cause loss of power and overheating.

So, if you're having ignition troubles on either truck, look over the distributor before doing anything else; maybe the wrong distributor was installed.



Go over the distributors in your supply room and make sure they're tagged right. This'll keep some unsuspecting mechanic from putting the wrong distributor in either truck.

SPRING INTO ACTION

Here's the scene.

You start your G 742 series truck and just when it gets to running, it starts to spit and sputter. And then—nothing. The engine has quit.

You know you have lots of gas in the tank. You think of other things it could be. And maybe you're right.

There's one thing it might be, tho—one that you'd never guess. Maybe your mechanic couldn't either, although he'd be the guy who goofed.

It could be that he disconnected the gas inlet line between the fuel pump and the carburetor and when he reconnected it, he forgot to put in the filter screen retainer spring. And without the spring, the fuel pushes the filter screen up into the carb. When this happens, the carb is emptied.

Once the engine stops . . . the filter screen drops down and the fuel is able to get back into the carb. But, when the engine is started again, the fuel pushes the screen up into the carb. You get spitting and sputtering . . . and the engine stops.

So . . . it's worth having your mechanic take a look to see if the spring is missing if you run into this kind of trouble.

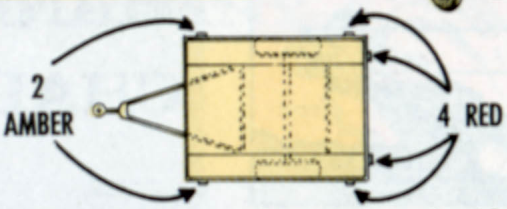
You might look over his shoulder to see how he handles the gas inlet line when he takes it off the fuel pump and puts it back on. He knows it's easy to get the threads crossed on the fitting . . . so he goes slow and easy.

RED REFLECTORS

Before you go high-tailing 'round the area with the M101 ¾-ton cargo trailer hitched to your pintle, take a squint at the tailgate reflectors.

They should be red. But somebody who had that trailer before may have changed 'em to amber.

That M101 should have four red reflectors . . . two in the lower corners



of the tailgate and one on each side in the lower rear corner. Amber reflectors should only be on the lower front corners of the side panels.

TRICK TRUCK MIRRORS

Dear Half-Mast,

Our battalion has been having a great deal of trouble trying to get the Federal Stock Numbers for the large truck rear view mirrors that are on our M125 10-ton cargo trucks.

The TM only gives the FSN for the small side mirror; these small mirrors are almost impossible to use when towing the 8-inch howitzer.

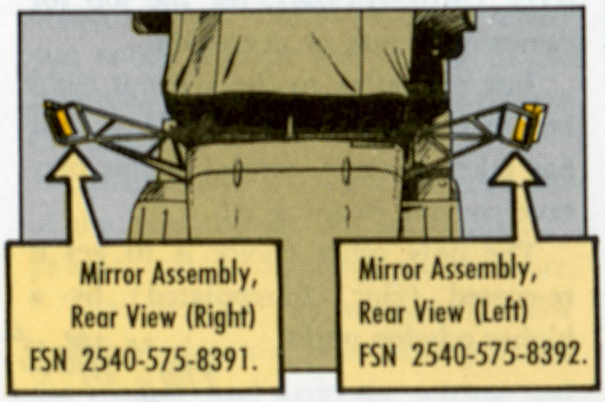
Do the large rear view mirrors have a Federal Stock Number?

PFC R. K. K.

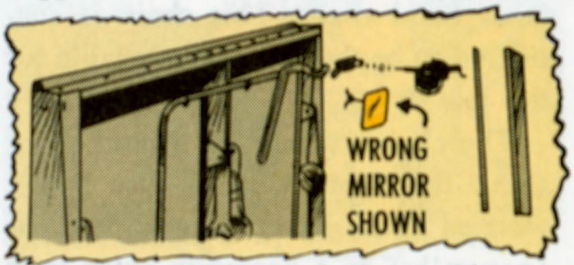
Dear Private R. K. K.,

They sure do. The FSN's are right in the TM where you can see them without knowing you're looking at 'em.

The mirrors are listed on page 74 of TM 9-2320-206-20P (Apr 61), and are identified in column (1) as items "2". The FSN and nomenclature go like this:



Now here's the trick; the picture on page 74 identifies items "2" as a small side mirror. Well, this small mirror slipped into that photo by mistake.

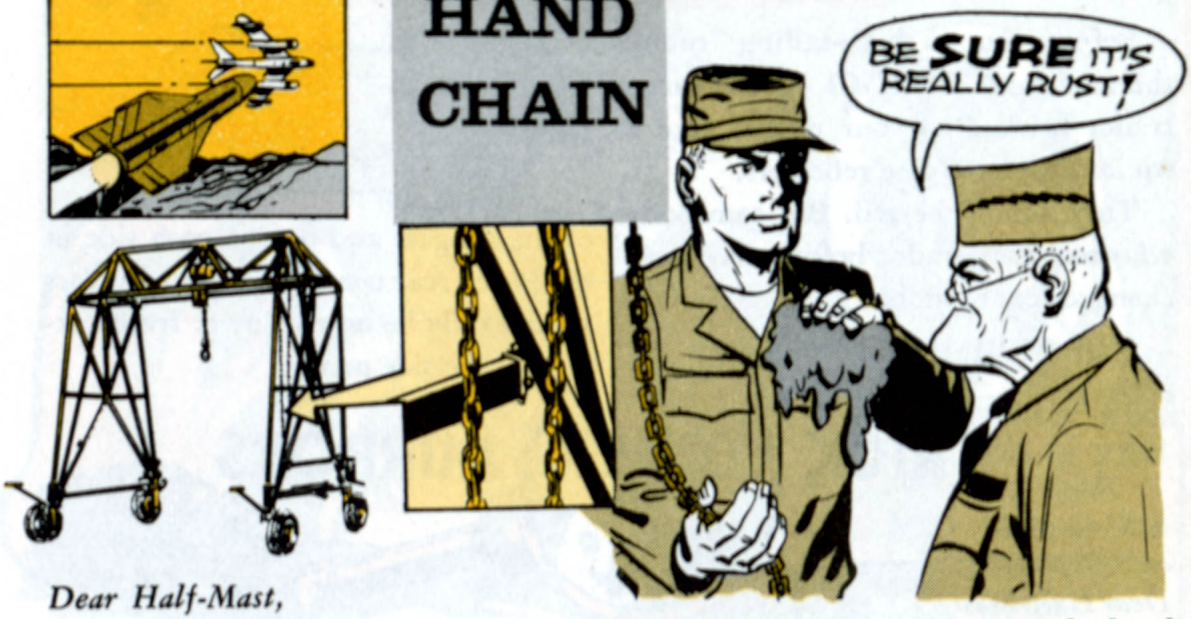


Items "2" which are the large side rear view mirrors, really look like the mirrors that are mounted on the M125 shown on pages 6 and 7 of the same TM. (The pubs people say they'll get around to taking care of this, next time out.)

Half-Mast

FIREPOWER

HAND CHAIN



Dear Half-Mast,

Can you help me with our problems with trying to keep rust outta the hand chain used with our A-frame, Portable Hoisting unit (FSN 1450-593-9477) on our Nike-Hercules site?

The chain has what looks like a galvanized coating to protect the links, but when this wears off, the rust bug goes back to work.

We've tried OE 10, but around here it disappears fast and rust starts again.

Would it be possible to get a chain made of stainless steel or some material that'll fight off this rust?

Sgt. H. E. D.

Dear Sergeant H. E. D.,

Nope, you won't be able to get any other hand chain. This chain is considered to be the best one available for the job.

There's one thing you should know about this type chain in case you're worried about being gigged. It turns (naturally) to a brownish color with age. It's quite possible to mistake this color-switch for rust.

Take a closer look-see and you may find that your chain has just gone thru one of its life cycles and got a bit discolored.

If it turns out that you really have a case of the "rust," then the best thing you can do is derust it the way TB 9-337 (Mar 61) tells you. The TB says to use Coating Compound, metal pretreatment, resin-acid, FSN 8030-165-8577 (Mil-P-15328), for the job for removal of rust or corrosion.

Just remember to check it out right before you decide that Ol' Man Rust has taken over. A careful squint may save you the cleaning job.

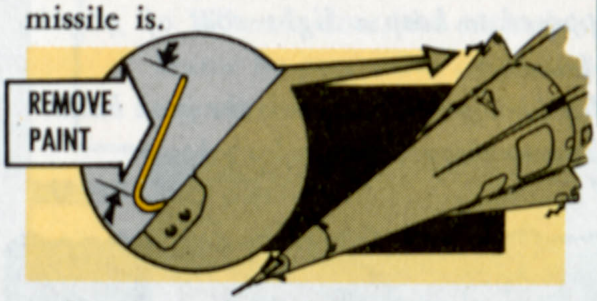
The only other choice is to get it re-coated (zinc electroplated) by a higher echelon outfit.

Half-Mast

TAKE OFF PAINT

Just a waste of time. And a deal that leads to possible trouble.

That's what painting the ram pressure probes on your Nike-Hercules missile is.



Sure . . . the paint wears away as you remove and replace the probe closure assembly during different checks and adjustments. And when the paint chips at the end of the probe, you have a rough time getting a good seal between the probe and the hose you attach

to the stagnation-pressure pump when you're checking out the pressure potentiometer in the missile.

So why fight it? You don't have to.

When the paint on the probe starts to wear away, remove it—starting from the end of the probe to where the bend starts. And leave it that way.

The rest of the probe, including the bend, does want to have paint on it.

NUTS MAKE CUTS

It's a fact . . . the anchor nuts on your Nike-Hercules RF test set are there to stay. So you'll have to live with them.

The nuts hold the pulse sweep generator . . . and they're in a spot where you could damage the wiring in the generator when you remove and replace the chassis.

If the wiring is caught between one of the nuts and the test set frame . . . ps-s-s-t, crackle and pop goes a short.

That means it's up to you to go slow and easy when you push in or pull out the chassis. And keep the wiring and

other chassis components out of the way of the nuts.

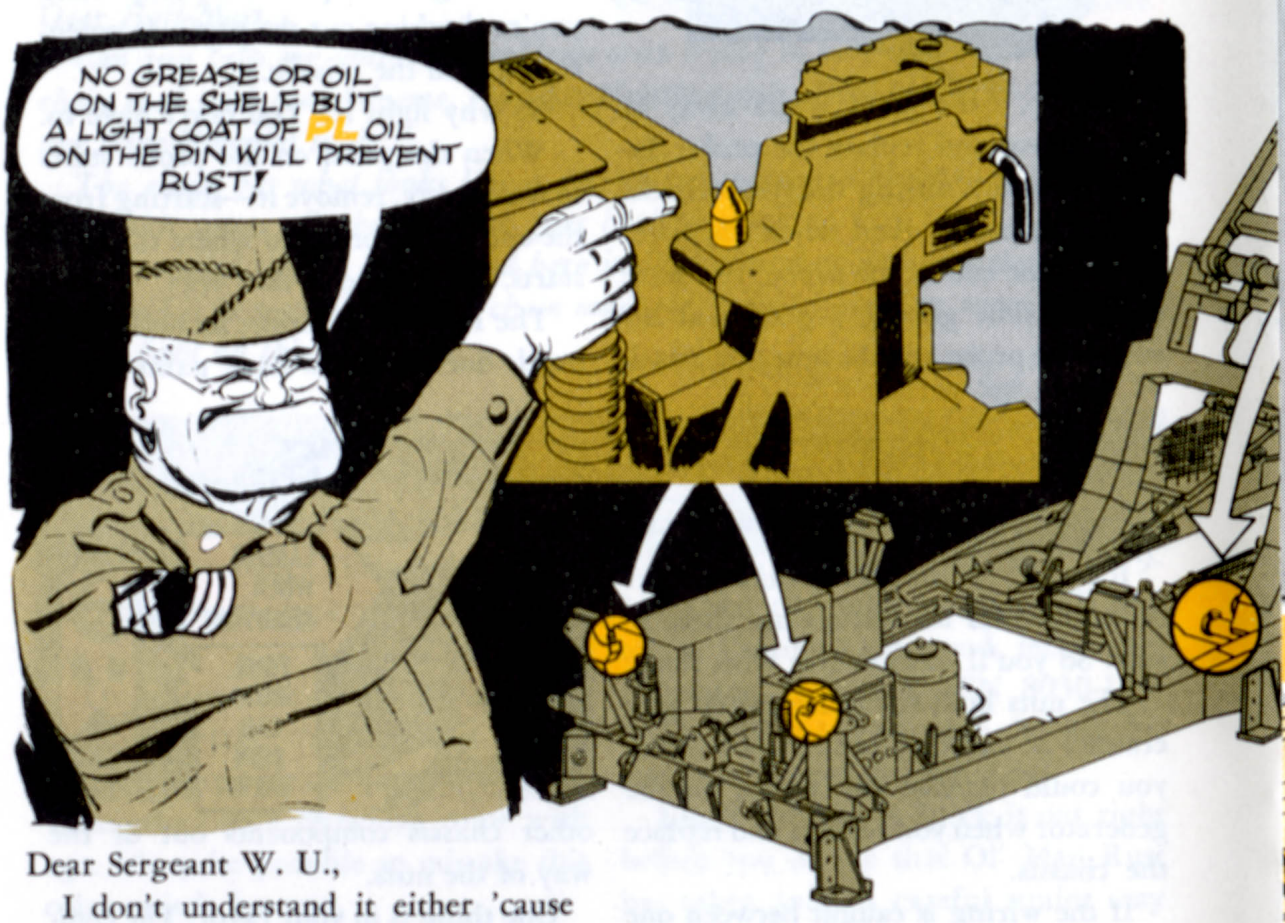
One thing is in your favor. The combined MWO J753-2-W32 and Y30-W14 (Mar 60) puts a ⅛-amp fuse in the sweep generator to prevent damage to the -28-volt filter network in case a short develops in the K2 relay.

Dear Half-Mast,

I sure can't understand why we're supposed to keep a light coat of grease on the pin shelf for our Nike-Hercules launcher.

The darn stuff collects dirt, dust and w hat have you. And when the junk builds up to more'n 1/16 inch, you can't get the launching beam to lock down.

SFC W. U.



Dear Sergeant W. U.,

I don't understand it either 'cause there's nothing in writing on Army level that says the shelf gets greased. After all, as you say, you can run into trouble when assorted stuff piles up on the indexing pin shelf.

But while you want to keep grease and oil off the shelf, it's a good idea to put a light coat of PL oil on the pin itself to prevent rust.

Half-Mast

NO GREASE

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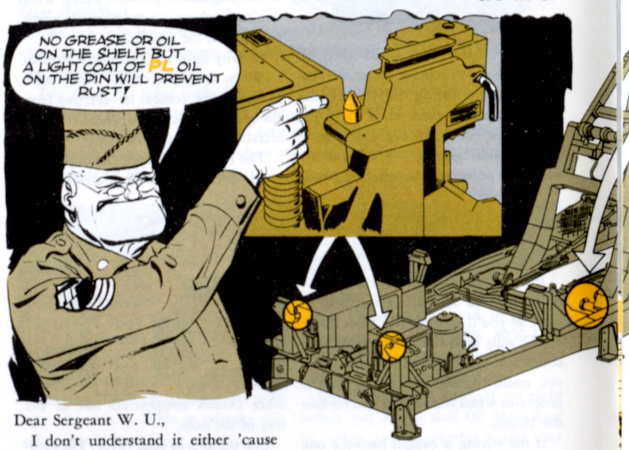

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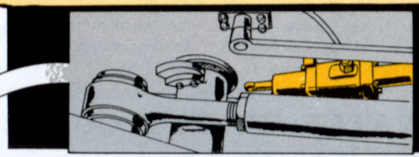
Half-Mast

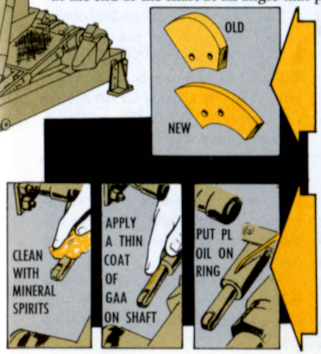
SLIDE, SHAFT, SLIDE

It wants to slide in and out—free and easy.

When it does, the extension shaft of the cam-operated equilibrator by-pass valve on your Nike-Hercules launcher will stand a good chance of living a long life.



When it doesn't, tho . . . there's a good chance that it might get bent or busted. MWO 9-1440-252-30/16 (1 Feb 63) oughta go a long way in calling a quick halt to damaged shafts. The MWO replaces the cam with one that hits the roller at the end of the shaft at an angle that puts a whole lot less strain on the shaft.



Maybe your launchers have the new cam . . . and maybe not. Either way, a little maintenance on your part will be a big help in keeping the extension shaft in good shape. All you have to do is run the shaft out as far as it'll go and then . . .

Clean it (and the roller) real good with volatile mineral spirits.

Put a thin coat of GAA on the shaft (unless you're in a dusty area and then it's best to leave the shaft dry).

And finish up by saturating the felt wiper ring with PL oil.

Doing this once a month—and oftener if the shaft needs cleaning—will save a lot of wear and tear on it.

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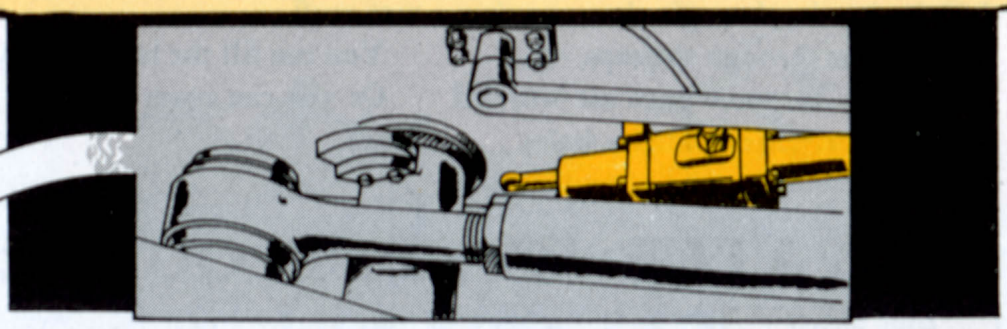

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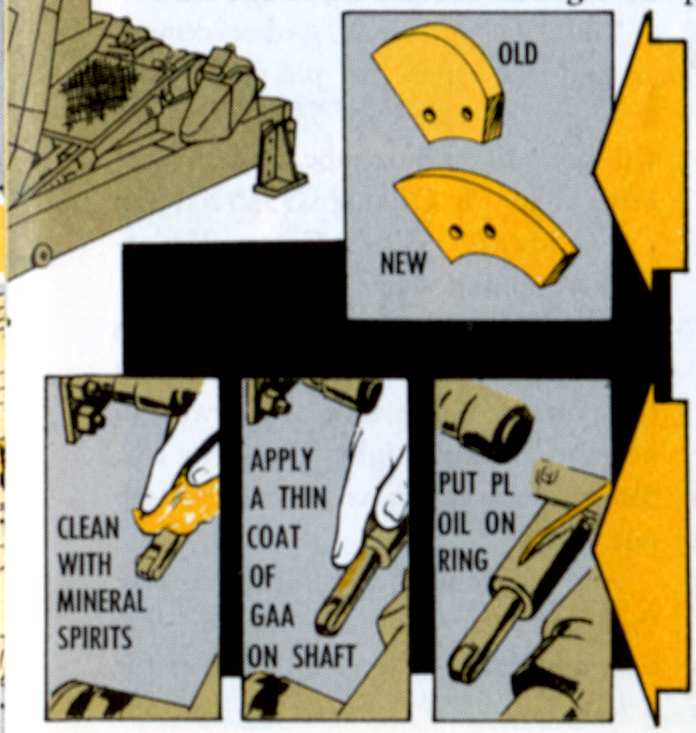

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FILL OR COVER 'EM

You know those holes—there're eight of 'em—in the trunnion caps on your Nike-Hercules launcher?

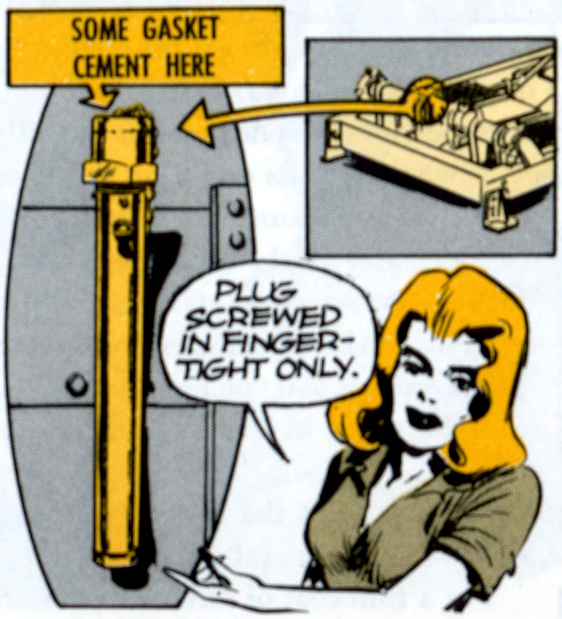
The holes were made for slipping dowel pins in through the trunnion, and go clear through the caps.

Anyway . . . some guys are worried about water getting in the holes . . . freezing in cold weather . . . and busting the trunnion. It sure would take some doing for this to happen, but if you'd feel better with no water in the holes, there're a coupla ways to keep out the wet stuff.

You can fill the holes with GAA. . . .

Or you can cover 'em with adhesive tape.

WATER KEEPER OUTER



There's no sense to getting in a lather when condensation or rain water collects in the bottom of the aiming circle mount tube on your Nike-Hercules launcher.

Sure . . . maybe you could get enough water in the tube for it to bust the thing as the wet stuff turns to ice and expands as it does.

Why not take the easy way out, tho?

You can put some gasket cement around the rivet or pin that goes through the cap. FSN 5330-252-3391 will get you an 8-oz tube. Page 582 of Federal Supply Catalog C5330-S1, Vol 1-C (1 May 63) calls it Grease, Hydrocarbon, oil and water resistant.

To add frosting to the cake, it's a good idea to make sure the plug on the bottom of the tube is screwed in no more'n finger tight. That way . . . condensation will have a chance to seep out.

And it sure wouldn't hurt to remove the plug every now and again—like once a month—in freezing weather for a look-see.

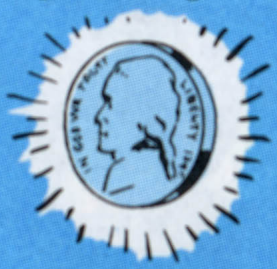
JOE'S DOPE

A NICKEL A DAY PAVED THE WAY

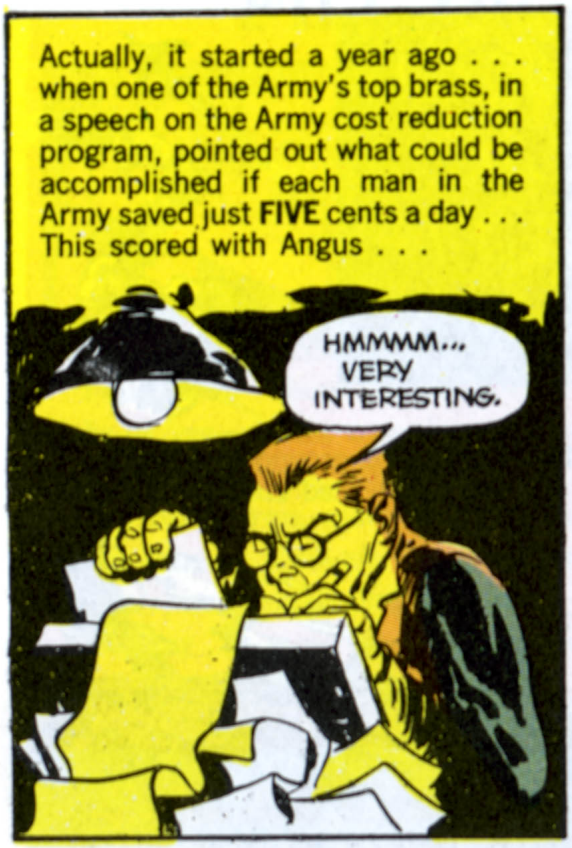
On D+10, the committed elements of the XXXIII corps ground to a halt . . . their assault was brunted . . . both they and the enemy had enough strength in depth to counter any eventuality. . . .

On D+20, to the surprise of the enemy, and the relief of XXXIII corps, additional support in the form of two fully equipped battalions of armor arrived. Armed with the latest weapons and vehicles, they tilted the scales in favor of XXXIII corps. In the face of new superiority of men and material, the enemy withdrew.

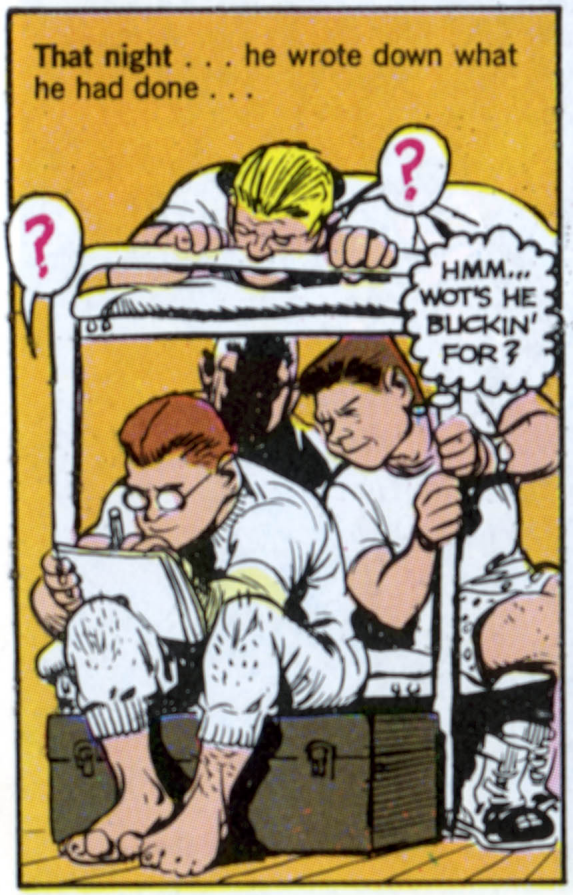
And . . . the whole deal was financed by **Angus Scrounge** . . . on



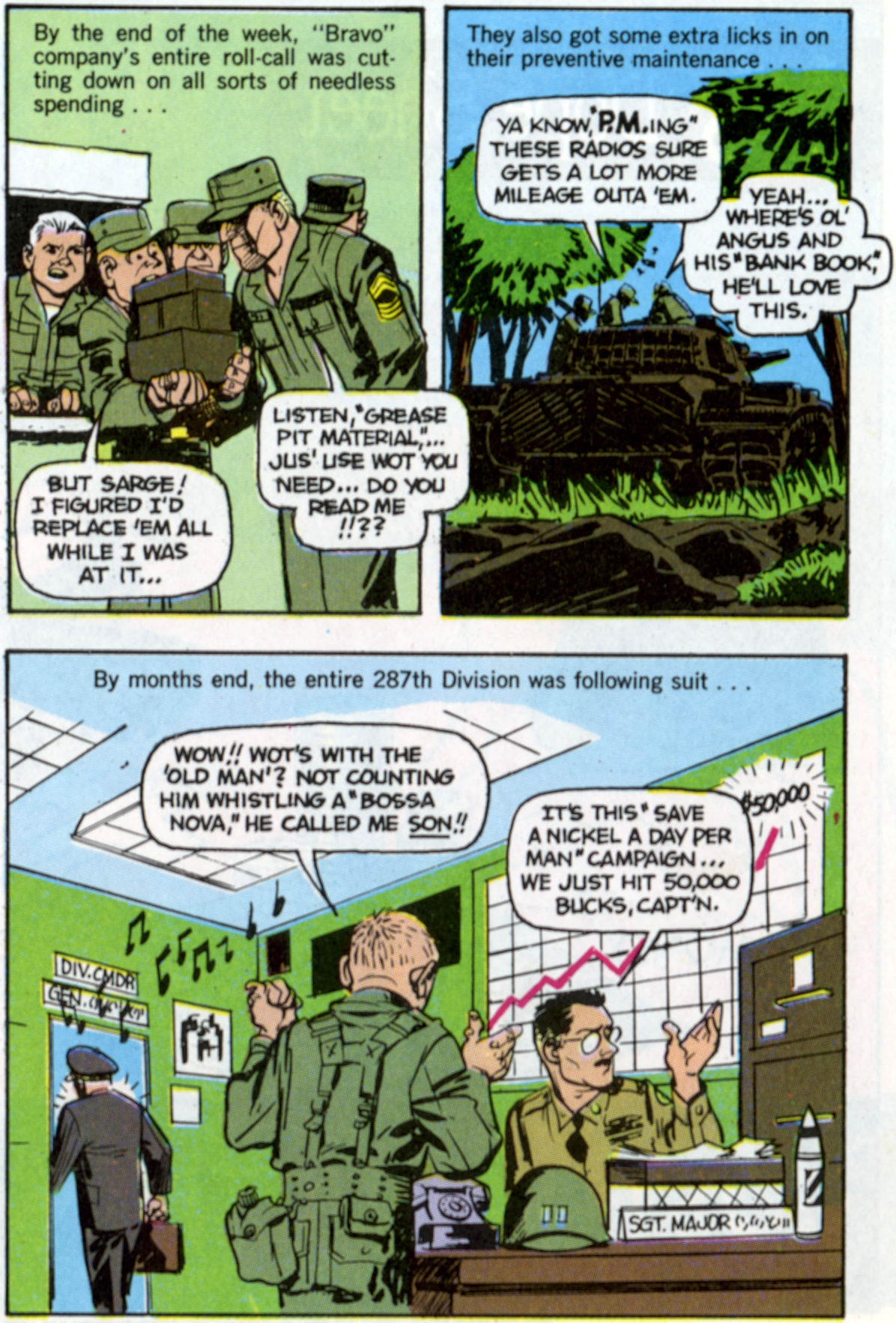
5¢ a day

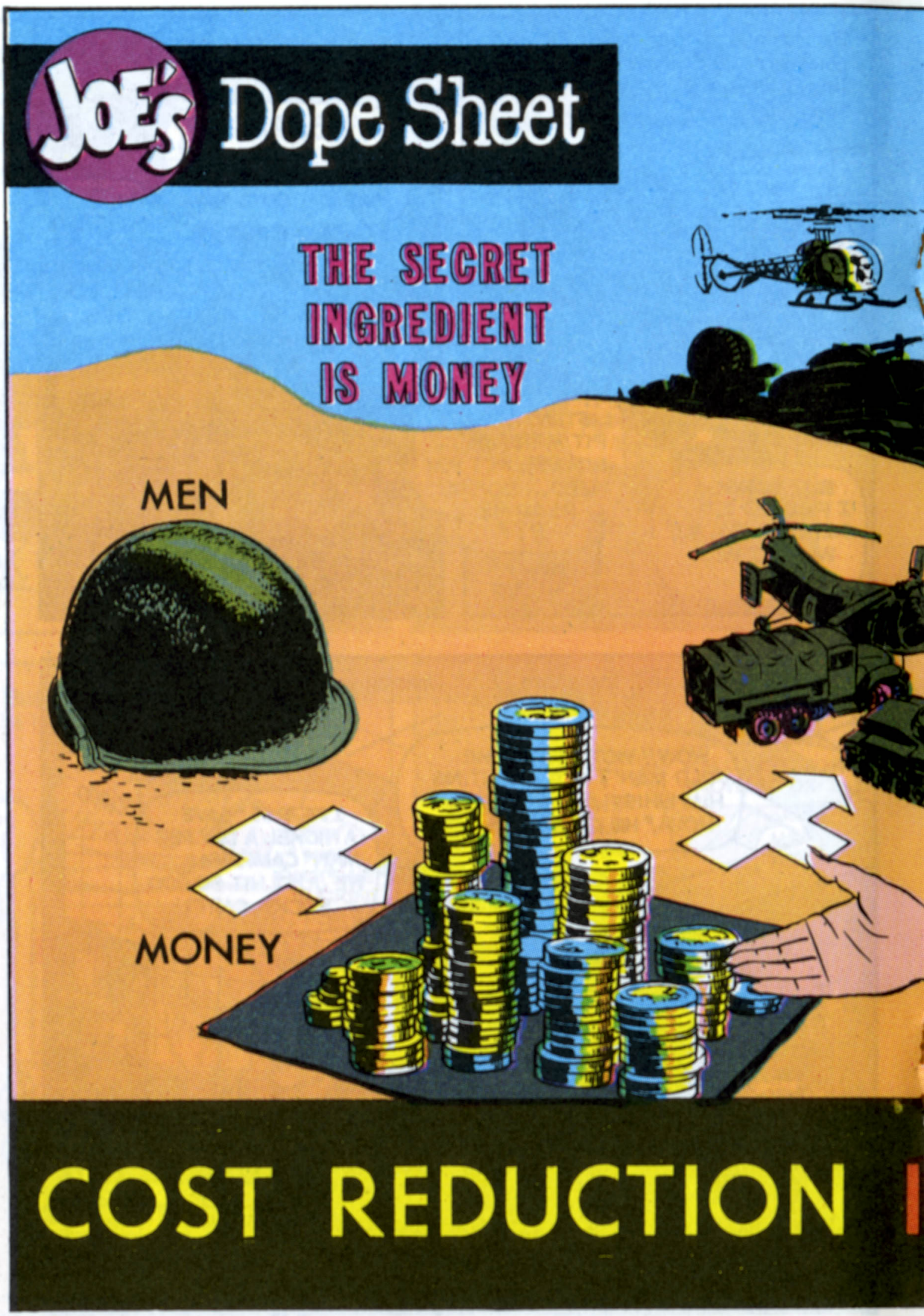

Actually, it started a year ago . . . when one of the Army's top brass, in a speech on the Army cost reduction program, pointed out what could be accomplished if each man in the Army saved just **FIVE** cents a day . . . This scored with Angus . . .
HMMMM... VERY INTERESTING.

Next morning . . . Angus began . . .
GOOD THING YOU NOTICED THAT PART WAS STILL GOOD, ANGUS!! 'CAUSE WE JUST SAVED ON GETTIN' A NEW ONE!
NO SWEAT, I JUST CHECKED IT OUT BEFORE REPLACING IT, SARGE.


That night . . . he wrote down what he had done . . .
?
?
HMM... WOT'S HE BUCKIN' FOR?

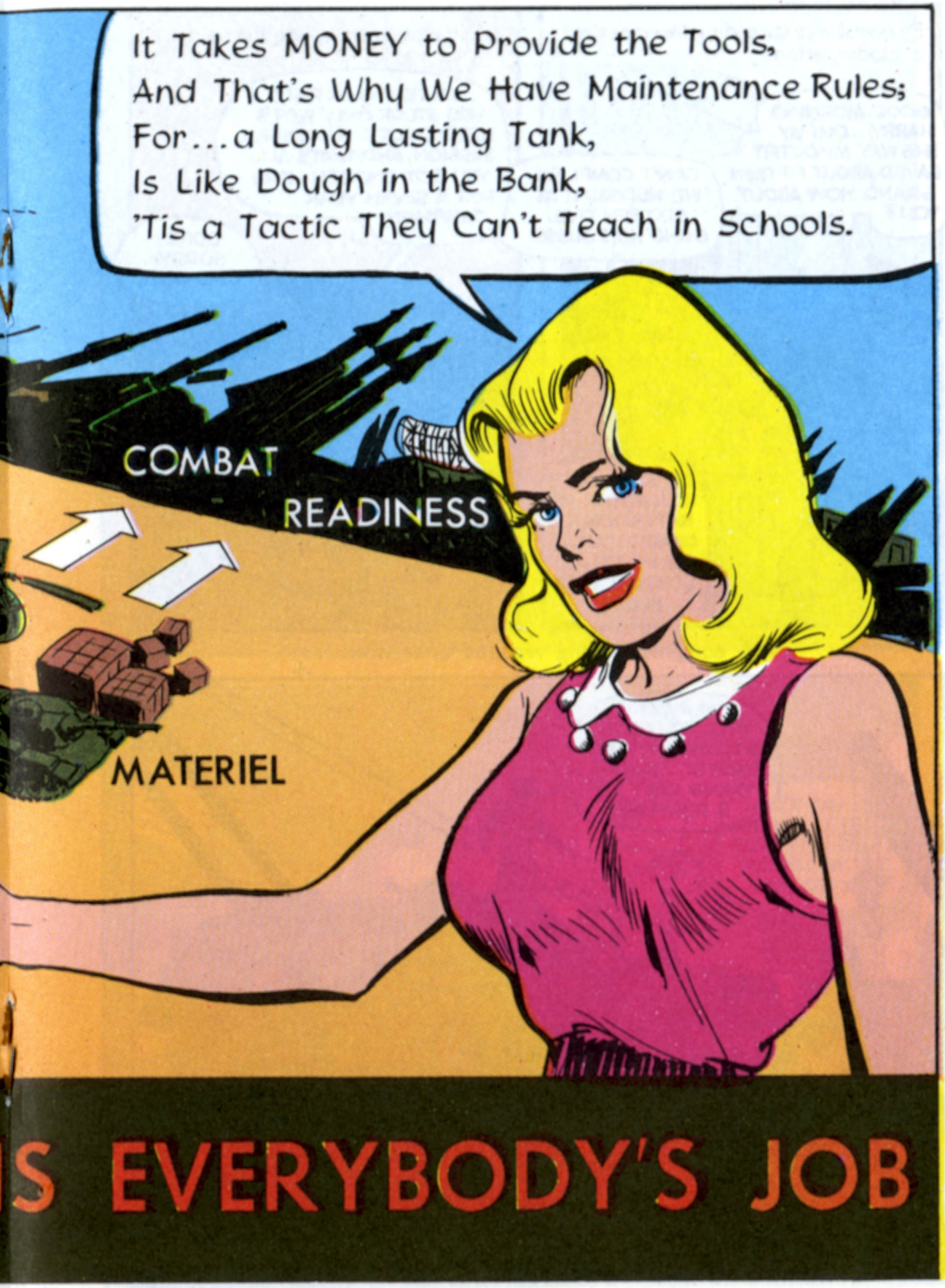
Next day . . . he decided to order **only** parts that were needed . . .
YA KNOW! I SAVED FIVE CENTS IN NOT ORDERING PARTS I DIDN'T NEED...
WELL WOTTA YA KNOW! SO DID I.
ME TO!
SO DID I.


By the end of the week, "Bravo" company's entire roll-call was cutting down on all sorts of needless spending . . .
BUT SARGE! I FIGURED I'D REPLACE 'EM ALL WHILE I WAS AT IT...
LISTEN, "GREASE PIT MATERIAL",... JUS' USE WOT YOU NEED... DO YOU READ ME !!??
They also got some extra licks in on their preventive maintenance . . .
YA KNOW, "P.M.ING" THESE RADIOS SURE GETS A LOT MORE MILEAGE OUTA 'EM.
YEAH... WHERE'S OL' ANGUS AND HIS "BANK BOOK," HE'LL LOVE THIS.
By months end, the entire 287th Division was following suit . . .
WOW!! WOT'S WITH THE 'OLD MAN'? NOT COUNTING HIM WHISTLING A "BOSSA NOVA," HE CALLED ME SON!!
IT'S THIS "SAVE A NICKEL A DAY PER MAN" CAMPAIGN... WE JUST HIT 50,000 BUCKS, CAPT'N.
$50,000
DIV. CMDR
SGT. MAJOR



IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR B

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.



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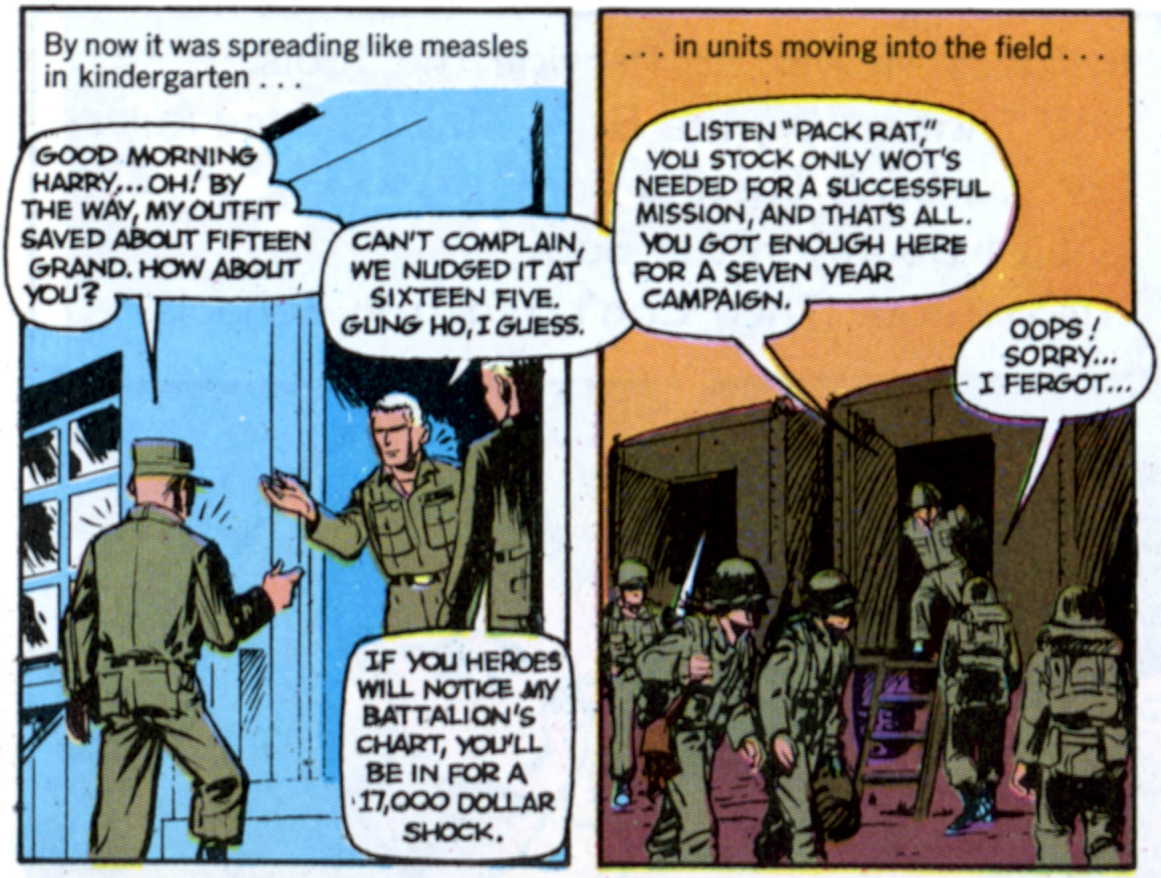
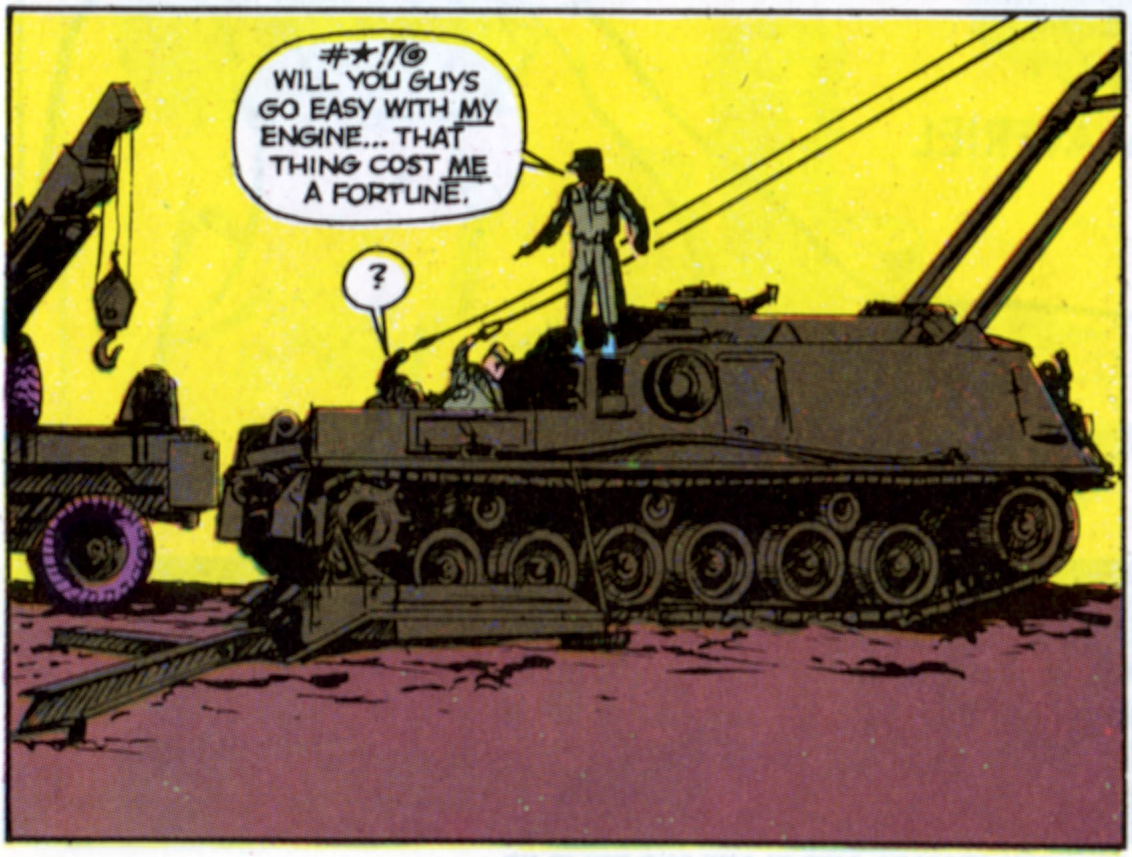
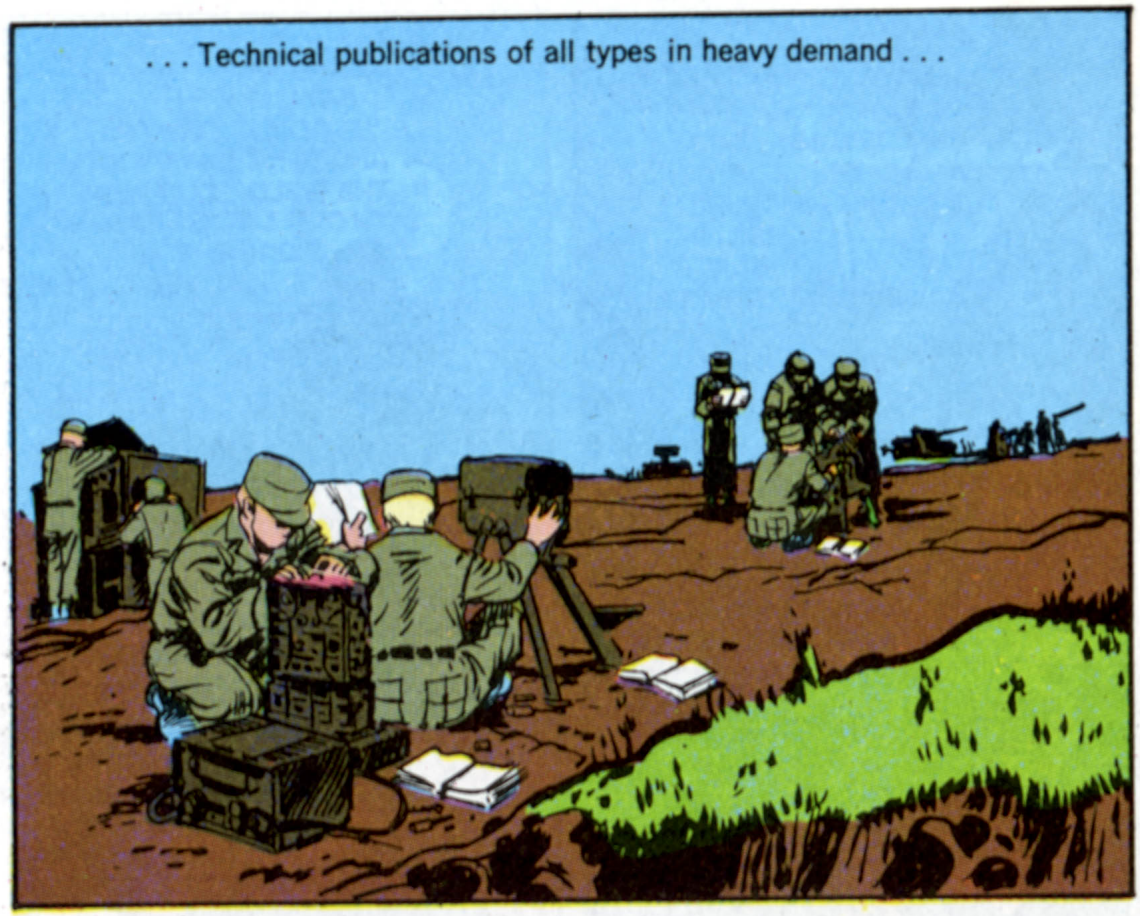
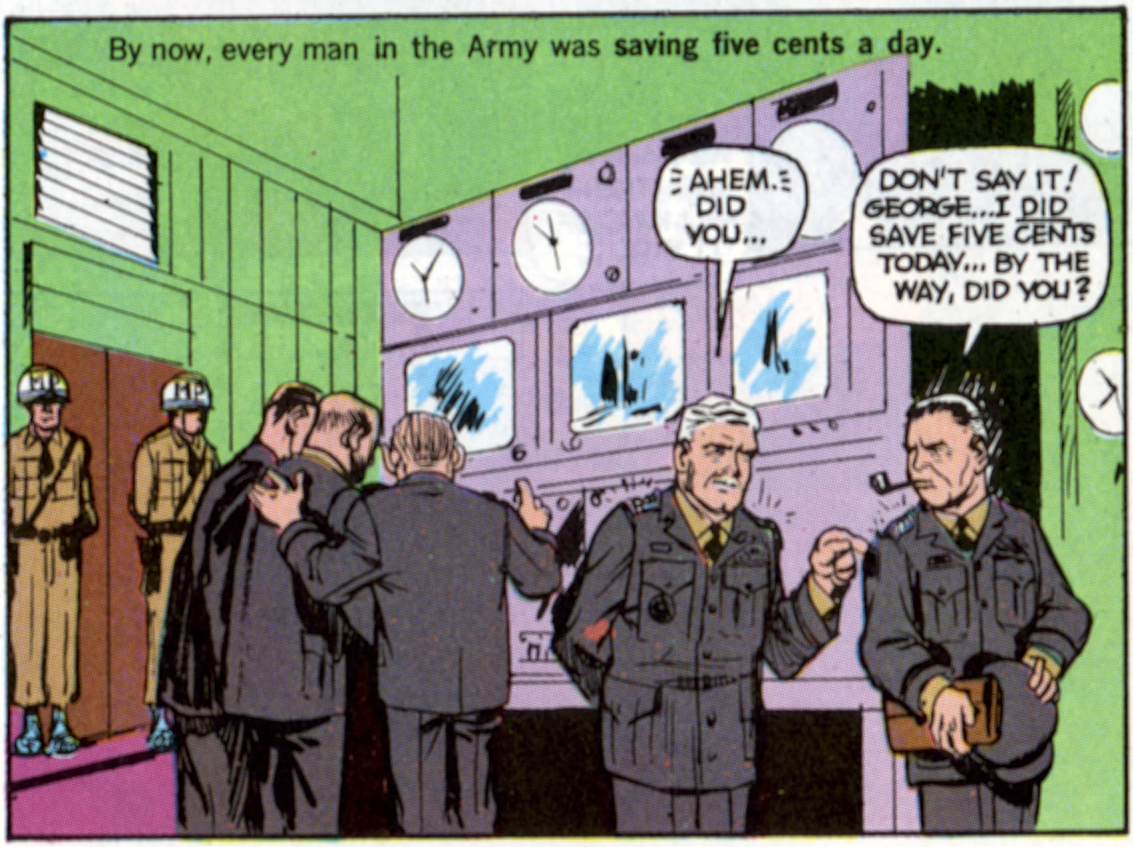
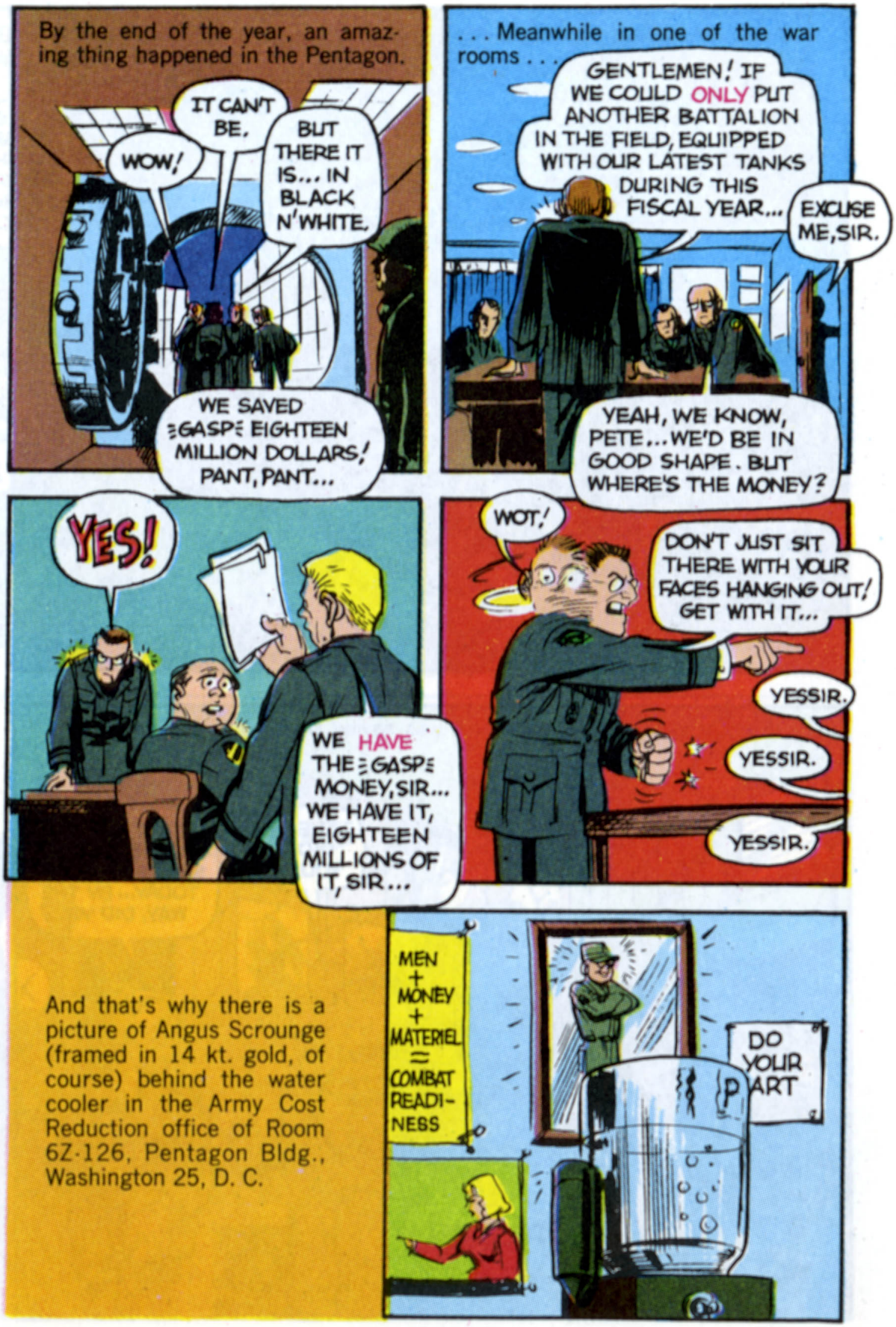


. . . with equipment being repaired or serviced . . .




. . . Technical publications of all types in heavy demand . . .


By now, every man in the Army was saving five cents a day.
AHEM. DID YOU...
DON'T SAY IT! GEORGE...I DID SAVE FIVE CENTS TODAY... BY THE WAY, DID YOU?
MP
MP


By the end of the year, an amazing thing happened in the Pentagon.
WOW!
IT CAN'T BE.
BUT THERE IT IS... IN BLACK N'WHITE.
WE SAVED =GASP= EIGHTEEN MILLION DOLLARS! PANT, PANT...
. . . Meanwhile in one of the war rooms . . .
GENTLEMEN! IF WE COULD ONLY PUT ANOTHER BATTALION IN THE FIELD, EQUIPPED WITH OUR LATEST TANKS DURING THIS FISCAL YEAR...
EXCUSE ME, SIR.
YEAH, WE KNOW, PETE... WE'D BE IN GOOD SHAPE. BUT WHERE'S THE MONEY?
YES!
WE HAVE THE =GASP= MONEY, SIR... WE HAVE IT, EIGHTEEN MILLIONS OF IT, SIR...
WOT!
DON'T JUST SIT THERE WITH YOUR FACES HANGING OUT! GET WITH IT...
YESSIR.
YESSIR.
YESSIR.
And that's why there is a picture of Angus Scrounge (framed in 14 kt. gold, of course) behind the water cooler in the Army Cost Reduction office of Room 6Z-126, Pentagon Bldg., Washington 25, D. C.
MEN + MONEY + MATERIEL = COMBAT READI-NESS
DO YOUR PART

BE YOUR OWN INSPECTOR . . .

TOWED 105 MM HOWITZER

So here's the picture: You're chief of section for a M101 or M101A1 105-mm towed howitzer that's got to belch shells the minute the whistle blows. And a gig-happy inspector's due any day to make sure it can do just that.

So, don't push the panic button. Beat 'em to the punch. Muster your gunner and cannoneers and pull a private team inspection of your own right now. Scrutinize your piece from tube tip to lunette with this checklist in your moist little mitts.

This M101's been around a long time, and despite the spotlight on the newer missiles and rockets, will likely be around a long time to come. It's a rugged, dependable hunk of artillery, the kind that'll go where you go and deliver that Sunday punch for you . . . as long as you keep it battle-ready.

PS MORE

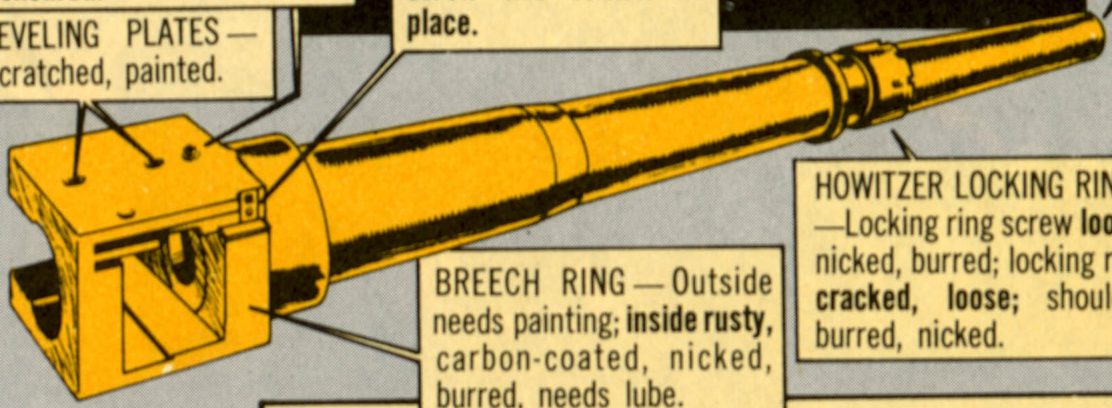
THAT BARREL GROUP

BORE — **dirty, gritty,** needs lube; **lands raised, chipped, broken** (tell your support people about 'em pronto); **not borescoped in past 90 days.** (Check the DA Form 2408-4 in your Log Book. If the howitzer wasn't borescoped according to the word in TM 9-1000-202-35, deadline it right off. And get your support to look at it pronto. This is **your** life, remember!)

BREECH RING LOCKING SCREW — **Loose, missing,** threads burred, stripped, **sheared.**

OPERATING LEVER HANDLE CATCH — **Loose,** screw **not staked in place.**

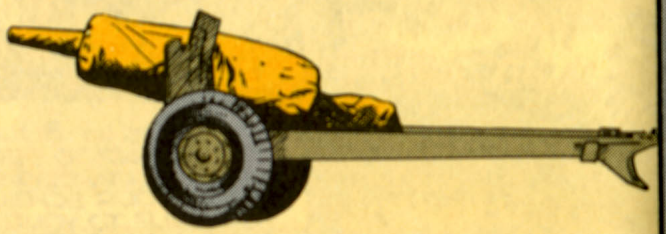
LEVELING PLATES — Scratched, painted.



HOWITZER LOCKING RINGS —Locking ring screw **loose,** nicked, burred; locking ring **cracked, loose;** shoulder burred, nicked.

BREECH RING — Outside needs painting; **inside rusty,** carbon-coated, nicked, burred, needs lube.

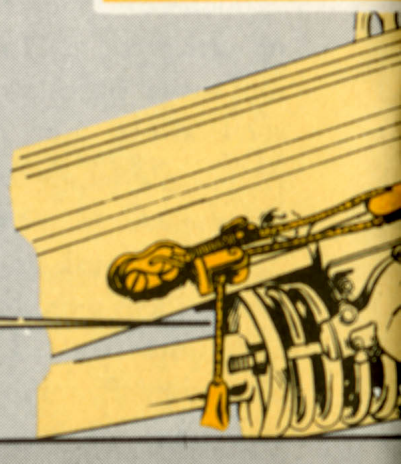
GUN COVER — Ripped, moldy, rotten, oil-soaked, cracked, not weatherproof; straps worn, busted, missing.



MUZZLE COVER — Missing, torn, worn, moldy; straps busted, worn, missing; buckle busted, missing.

FIRING

LANYARD—**Broken,** worn, frayed; handle cracked, **missing;** roller bracket loose, **cracked; S-hook bent.** (Tent rope or any other kind of a makeshift cord won't pass inspection. FSN 1015-317-2484 will fetch the kind you need.)



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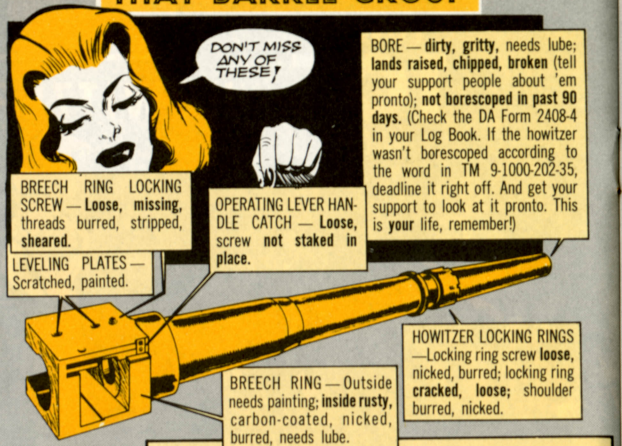

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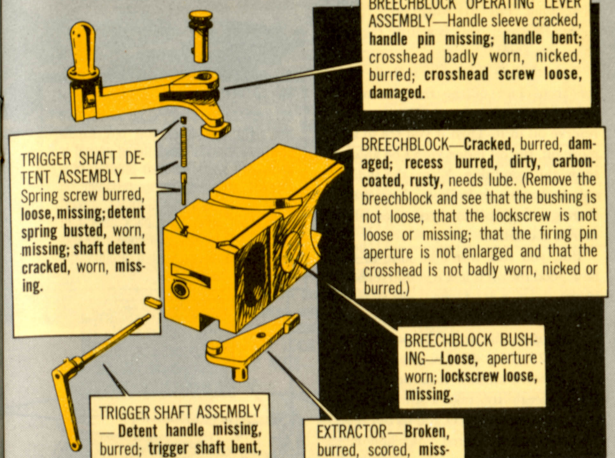
BREECH MECHANISM



BREECHBLOCK OPERATING LEVER ASSEMBLY—Handle sleeve cracked, **handle pin missing; handle bent;** crosshead badly worn, nicked, burred; **crosshead screw loose, damaged.**

TRIGGER SHAFT DETENT ASSEMBLY — Spring screw burred, **loose, missing; detent spring busted,** worn, **missing; shaft detent cracked,** worn, **missing.**

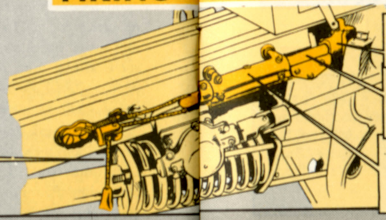
BREECHBLOCK—**Cracked,** burred, **damaged; recess burred, dirty, carbon-coated, rusty,** needs lube. (Remove the breechblock and see that the bushing is not loose, that the lockscrew is not loose or missing; that the firing pin aperture is not enlarged and that the crosshead is not badly worn, nicked or burred.)

BREECHBLOCK BUSHING—**Loose,** aperture worn; **lockscrew loose, missing.**

TRIGGER SHAFT ASSEMBLY — **Detent handle missing,** burred; **trigger shaft bent,** scored, **won't turn easy; arm bent, cracked.**

EXTRACTOR—**Broken,** burred, scored, **missing.**

FIRING MECHANISM



PAWL — Worn, loose, **rusty.**

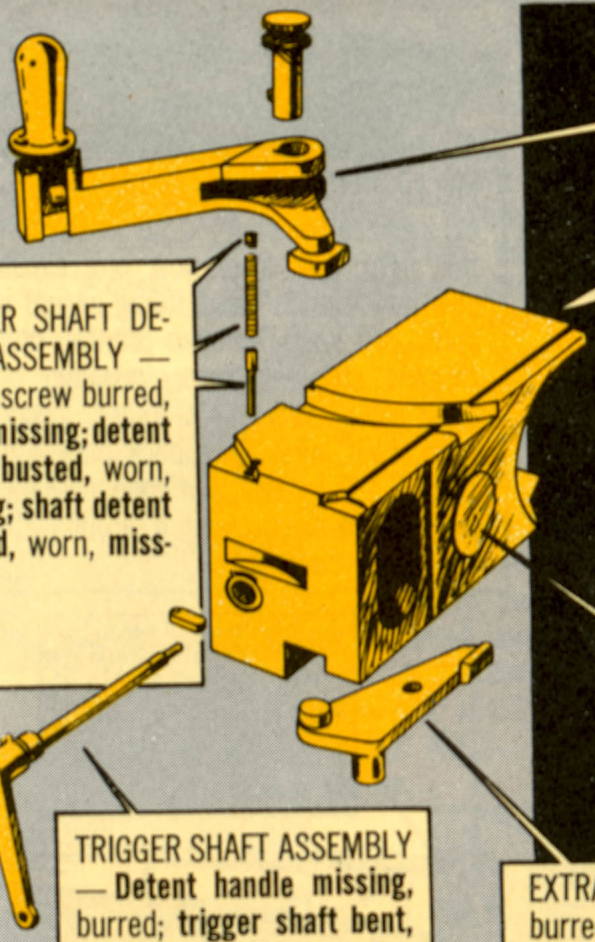
FIRING SHAFT — **Badly worn, loose, rusty;** bushing badly worn, **loose.**

FIRING SHAFT BRACKET ASSEMBLY—**Cracked,** bracket screws **loose, missing.**

FIRING LOCK—Firing pin burred, pitted, **broken;** firing pin holder **rusty;** cotter pin **missing, sheared;** sear worn, **chipped;** sear spring **missing,** bent, weak; firing case **cracked, rusty; trigger fork won't work easy, bent.** (Shape up, man! Using any old spring in place of your howitzer sear spring is strictly verboten. Use the right one, FSN 1015-502-1092, listed in TM 9-1015-203-20P dated 20 Mar 61.)

MORE

BREECH MECHANISM



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BREECHBLOCK BUSHING—**Loose,** aperture worn; **lockscrew loose, missing.**

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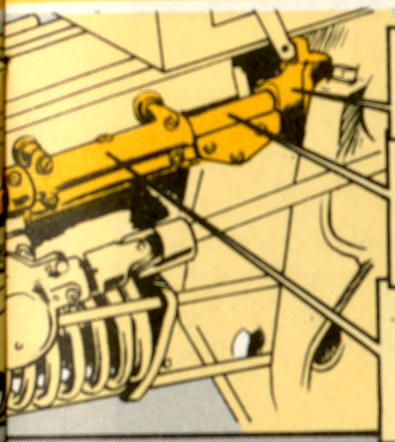
EXTRACTOR—**Broken,** burred, scored, **missing.**

MECHANISM



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25 MORE

RECOIL MECHANISM

Keeping the right amount of the right kind of good clean oil in the recoil mechanism is about as important as keeping your girl warm on a frigid night. However, this is a little trickier than you think.

Even though the index is flush with the front face of the recuperator, it might have an excessive amount of reserve oil in it. Then if you try to add more oil, the oil index won't be able to show this condition. Y'see, the indicator mechanism is built to show when there's enough oil in there—not when there's too much.

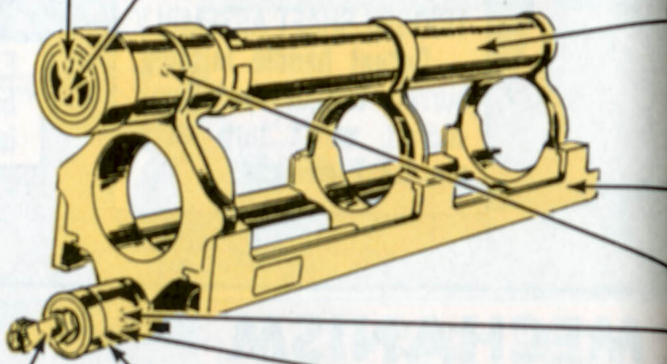
But, you still won't be able to tell how good the oil is less'n you first check it out.

Drain and re-establish the oil reserve, according to the word in para 88 of TM 9-325 (May 48), w/changes. For the lowdown on how to inspect the oil for serviceability, take a squint at TB ORD 605 (19 May 55) and its changes.

If you haven't fired your howitzer lately, you also oughta check your DA Form 2408-4 to see if the recoil mechanism's been exercised in the past six months, like its spelled out in TB ORD 303.

FILLER PLUG—Hex head nut rounded off (replace the plug . . . be sure to use the right tool from now on); excessive leak (means valve filling gasket is shot—tell your Ord man pronto); plug threads stripped, worn, **missing;** oil valve cavity dirty, metal-fouled; gasket worn, split, missing. (Check para 4 of TB ORD 586 for the color code markings you should have painted around the filler plug housing.)

OIL INDEX — Plugged, dirty; packing too tight and/or defective (this'll cause the index to stick or leak).



PISTON ROD—**Not adjusted right.** (The piston rod nut should be drawn up tight enough to avoid end play. Then back it off one castellation. This lets the piston rod find its natural position without binding and causing a leak at the stuffing box.) **Outer nut cracked, loose,** threads burred; **cotter pin missing.** (This is the baby to watch, men. If that nut's not on right when you fire off, your howitzer's liable to head for Timbuctoo —and you, too!)

STUFFING BOX— **Excessive leaks.**

RECOIL CYLINDER — Respirator dirty, loose, open (it should be closed when the weapon's not being used, but double-check to see if it'll open and close without sweat).

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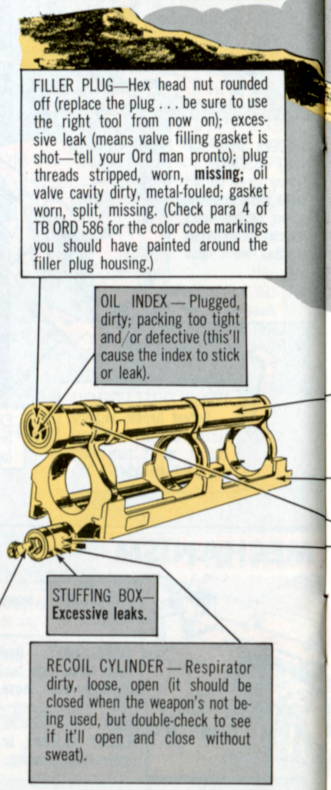

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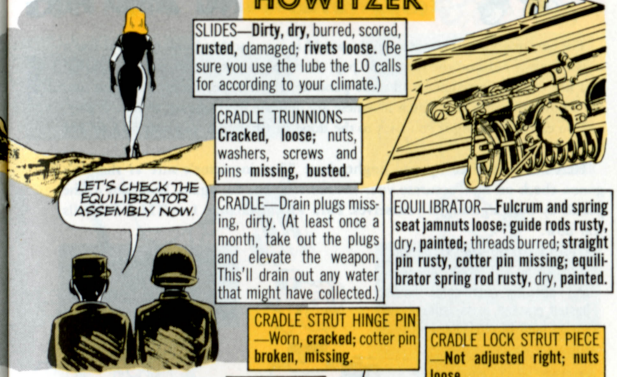
HOWITZER



SLIDES—**Dirty, dry,** burred, scored, **rusted,** damaged; **rivets loose.** (Be sure you use the lube the LO calls for according to your climate.)

CRADLE TRUNNIONS—**Cracked, loose;** nuts, washers, screws and pins **missing, busted.**

CRADLE—Drain plugs missing, dirty. (At least once a month, take out the plugs and elevate the weapon. This'll drain out any water that might have collected.)

EQUILIBRATOR—**Fulcrum and spring seat jamnuts loose; guide rods rusty,** dry, **painted;** threads burred; **straight pin rusty, cotter pin missing; equilibrator spring rod rusty,** dry, **painted.**

CRADLE STRUT HINGE PIN —Worn, **cracked;** cotter pin **broken, missing.**

CRADLE LOCK STRUT PIECE —**Not adjusted right; nuts loose.**

CRADLE LOCK STRUT NUTS—**Loose.**

RECUPERATOR CYLINDER—Dented, chipped, **cracked.**

SLEIGH ASSEMBLY — Badly rusted, needs painting; yokes and rails burred, pitted.

RECUPERATOR PURGE PLUGS—**Oil seepage.**

CRADLE LOCK STRUT TURNBUCKLE—**Loose.**

CRADLE LOCK STRUT BRACE—**Loose.**

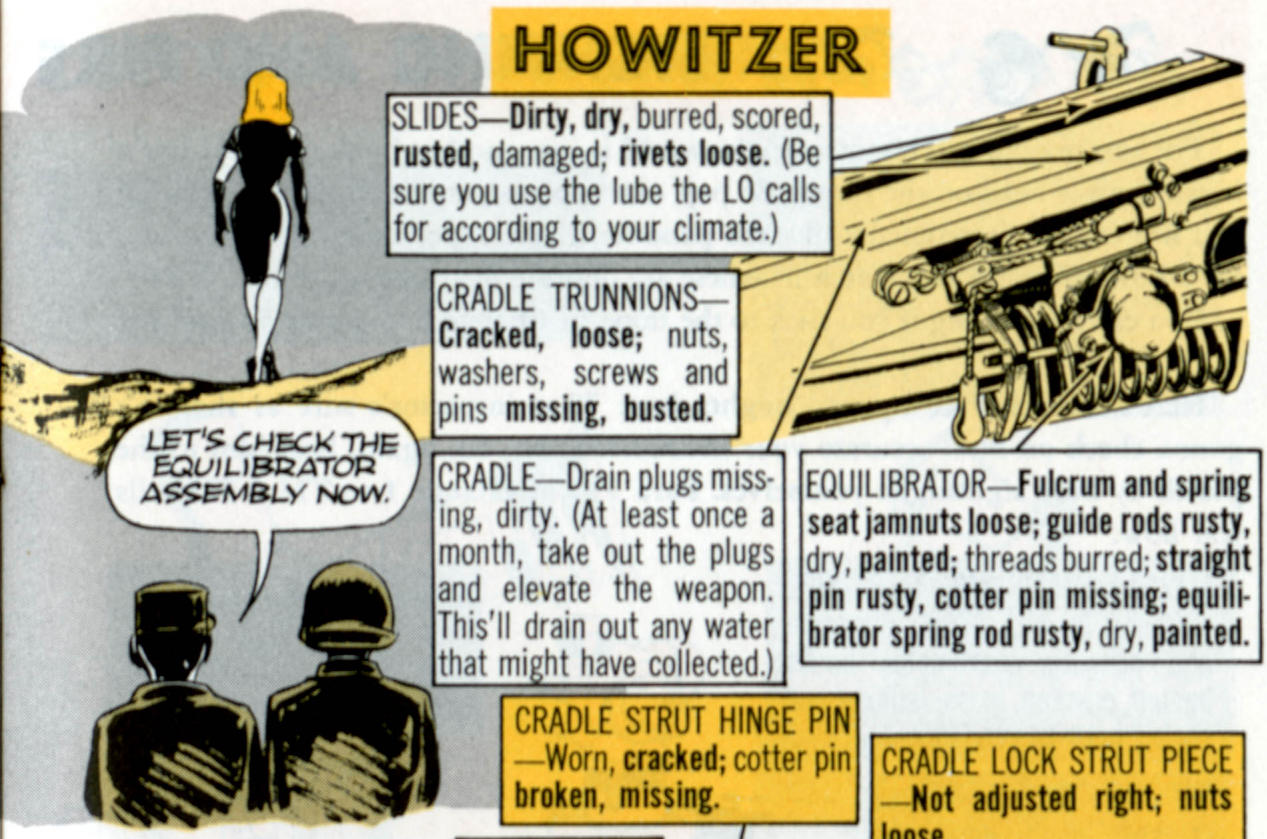
LOWER STRUT LATCH ASSEMBLY — **Loose, needs adjusting.**

RECOIL MARKER — **Missing, won't work.**

(Paste this to your eyeballs: The spring rod should be lubed with PL and never be painted. Always be sure the three guide rod nuts are adjusted evenly so that the tension on the spring is just right. Para 96 of TM 9-325 has the scoop. In general, when they're adjusted right it'll take the same amount of force to elevate the tube as it will to depress it.)

MORE

HOWITZER



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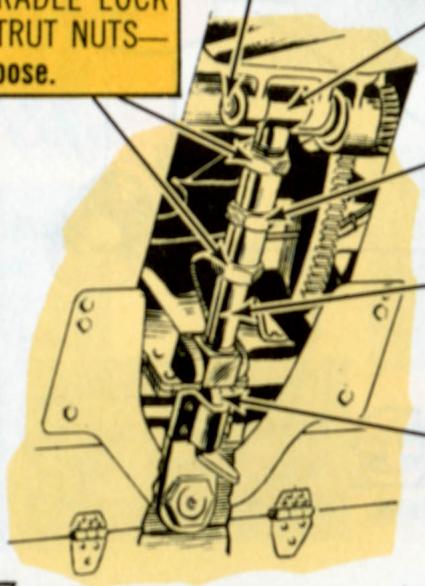

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MORE

SIGHTING AND FIRE

The best maintained howitzer in the world is just another hunk of metal less'n it can draw a bead on the target. So pay extra-special attention to the sighting and fire control instruments like the panoramic telescope, range quadrant and the elbow telescope. But watch it—these are delicate instruments, so take it easy.

You can't go wrong if you stick to the dope in Change 1 (13 Oct 53) to TM 9-325.

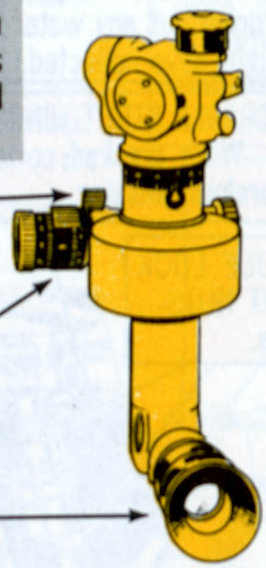
Here's another free tip you oughta buy: That inspector's sure as shootin's gonna check on how accurate your instruments are. So, again, beat him to the punch by bore sighting it yourselves. Para 130 in Change 1 to TM 9-325 tells you how.

M12A7H PANORAMIC TELESCOPE —Clamp busted, loose; elevation and azimuth micrometer knobs **busted, cracked,** loose; **indexes and scales hard to read,** loose.

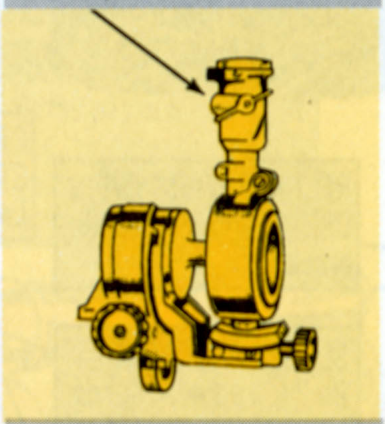
THROWOUT LEVER—**Broken, cracked; won't work right** (should return automatically to operating position).

MICROMETER—**Broken,** loose.

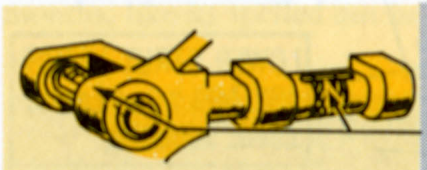
EYESHIELD—**Cracked,** eyepieces smeared, dirty, scratched.



WING KNOB—**Broken,** loose, latch spring weak (won't snap latch instantly into locked position).



M21A1 TELESCOPE MOUNT —Mounting screws loose, **missing;** leveling knob **cracked,** loose, **won't turn easy through complete range; socket bent,** burred.



LEVEL VIALS—Cracked, **broken,** dirty; housings loose; screws loose, burred.

AMMU

Don't rightly know which is worse—ammo that goes off when it shouldn't or ammo that won't go off when it should. But the causes are usually the same. Lack of protection and the wrong kind of handling.

Keep your ammo dry and away from real hot heat—and especially direct sunlight. Keep it clean and handle it like hummingbird eggs, and everything'll be just fine.

SIGHTING AND FIRE

The best maintained howitzer in the world is just another hunk of metal less'n it can draw a bead on the target. So pay extra-special attention to the sighting and fire control instruments like the panoramic telescope, range quadrant and the elbow telescope. But watch it—these are delicate instruments, so take it easy.

You can't go wrong if you stick to the dope in Change 1 (13 Oct 53) to TM 9-325.

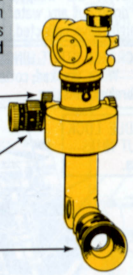
Here's another free tip you oughta buy: That inspector's sure as shootin's gonna check on how accurate your instruments are. So, again, beat him to the punch by bore sighting it yourselves. Para 130 in Change 1 to TM 9-325 tells you how.

M12A7H PANORAMIC TELESCOPE —Clamp busted, loose; elevation and azimuth micrometer knobs **busted, cracked,** loose; **indexes and scales hard to read,** loose.

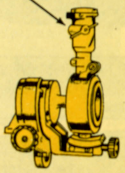
THROWOUT LEVER—**Broken, cracked; won't work right** (should return automatically to operating position).

MICROMETER—**Broken,** loose.

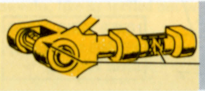
EYESHIELD—**Cracked,** eyepieces smeared, dirty, scratched.



WING KNOB—**Broken,** loose, latch spring weak (won't snap latch instantly into locked position).



M21A1 TELESCOPE MOUNT —Mounting screws loose, **missing;** leveling knob **cracked,** loose, **won't turn easy through complete range; socket bent,** burred.



LEVEL VIALS—Cracked, **broken,** dirty; housings loose; screws loose, burred.

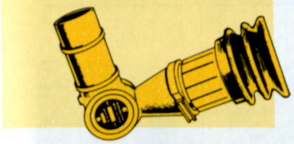
AMMUNITION

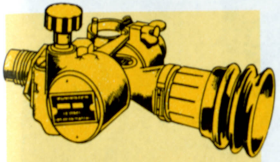
Don't rightly know which is worse—ammo that goes off when it shouldn't or ammo that won't go off when it should. But the causes are usually the same. Lack of protection and the wrong kind of handling.

Keep your ammo dry and away from real hot heat—and especially direct sunlight. Keep it clean and handle it like hummingbird eggs, and everything'll be just fine.

CONTROL INSTRUMENTS

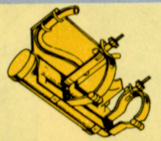
M16A1D ELBOW TELESCOPE — **Eyepiece cracked,** dirty, scratched, foggy; illumination window broken, not sealed tight, not secured to telescope; adapter damaged.





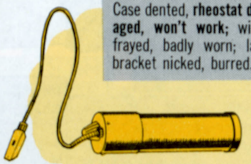
M23 TELESCOPE MOUNT — **Telescope clamp cracked;** wing nut **busted;** eye bolt **bent,** crossthreaded; cotter pin **busted, rusty;** clamping bolt loose, burred; instrument light clamp **bent, twisted;** bracket rotating knob **broken, cracked, won't turn evenly, too much backlash;** elevation worm screw burred, won't lock firm.

BATTERIES AND LAMPS — Loose, **missing, don't work.** (Take off the battery bracket so's you can give a better look for rust or bad contacts. Remember — leave the batteries out when the weapon's not in use . . . they may leak!)



M19 INSTRUMENT LIGHT — **Parts missing, broken,** twisted; case dented, rusty; clamp hinges and nuts won't turn easy; lamp nicked, burred on the mating surface.

M36 INSTRUMENT LIGHT— Case dented, **rheostat damaged, won't work;** wiring frayed, badly worn; lamp bracket nicked, burred.



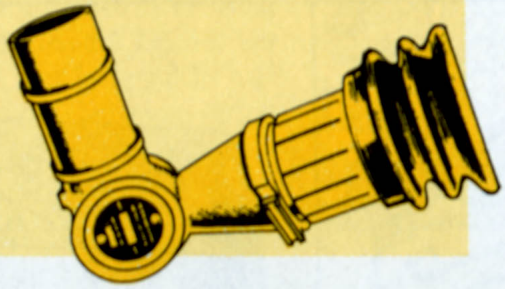
STORAGE RACKS — Ammo not separated by type, caliber or lot number; **boxes broken, seals open;** not enough dunnage (should be 3 inches at least); boxes not marked right; safety signs missing; **fire-fighting equipment not handy.**

ROUNDS AND CONTAINERS — **Markings unreadable;** containers damaged, **seals broken; cases cracked,** dented, oily.

MORE

CONTROL INSTRUMENTS

M16A1D ELBOW TELESCOPE — **Eyepiece cracked,** dirty, scratched, foggy; illumination window broken, not sealed tight, not secured to telescope; adapter damaged.



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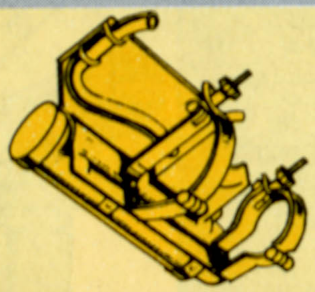

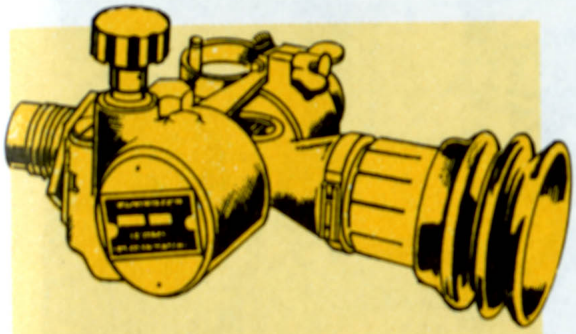

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STORAGE RACKS — Ammo not separated by type, caliber or lot number; **boxes broken, seals open;** not enough dunnage (should be 3 inches at least); boxes not marked right; safety signs missing; **fire-fighting equipment not handy.**

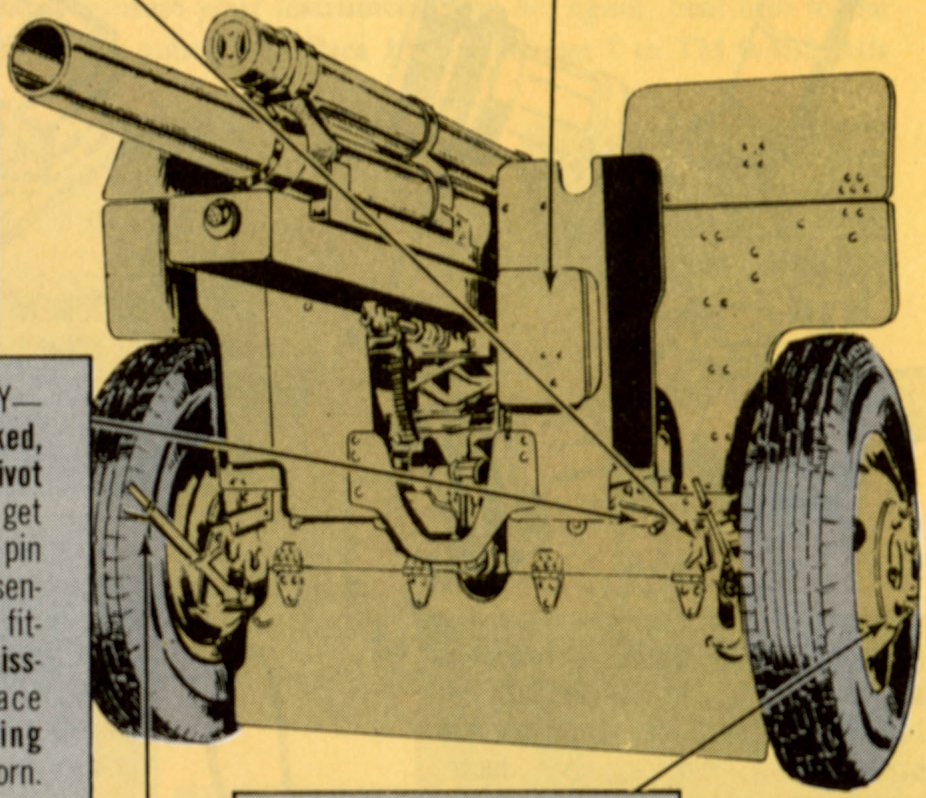
ROUNDS AND CONTAINERS — **Markings unreadable;** containers damaged, **seals broken; cases cracked,** dented, oily.

MORE

BOTTOM SHIELD LATCH ASSEMBLY — **Bracket cracked, twisted, broken;** latch handle **busted, won't pivot;** plunger **missing,** split, burred; **spring missing,** weak, worn; cotter pin sheared, **missing;** hinges **broken,** loose, **missing;** U-bottom **staples missing, bent, broken.**

PANORAMIC TELESCOPE CASE—Dented, cracked; rubber seal cracked, painted (it should be waterproof), loose in bracket; bracket and clamp assemblies loose, bent, missing; pins, bolts and nuts missing, loose, sheared; bracket dry, not lubed; hinges broken, loose; bearing surface painted; chains missing, not welded.

MARKINGS AND CLASSIFICATIONS—Missing, wrong; letters and numbers worn, hard to read. AR 746-2300-1 (11 Mar 60) with 8 changes has the scoop.



AXLE LOCK ASSEMBLY—**Handle missing, cracked, bent,** burred, **won't pivot or lock** (you should get a positive lock of the pin in the engaged or disengaged position); lube fitting plugged, dirty, **missing;** bearing surface scored, worn; **spring missing, cracked,** worn.

HAND BRAKES—**Busted,** not adjusted right, **loose;** lever bent, worn; **trip handle won't release or hold;** ratchet worn, stripped; spring worn, weak, **missing;** cotter pins missing, broken; castle nut stripped, worn, loose, missing. (Jack up the wheels to check and adjust the hand brakes. If you get up to seven clicks on the ratchet rack, it's OK, but any more'n that means the brake's not adjusted right. You'll know the brakes are set right when you pull the lever about half-way forward on the rack.)

WHEELS—**Stud nuts loose, busted, missing;** wheel bearings not adjusted right (see Para 101 in TM 9-325), rusty, chipped, worn, dry; brake bands worn, greasy, scored. (If the grease is mustard- instead of mahogany-colored it's emulsified—the wheels need re-packing. Check Para 103 for removal and packing of wheel bearings. But be sure you don't get the grease seal in backwards. In other words, place the neoprene seal so that the lip faces inward toward the bearings.)

BOTTOM SHIELD LATCH ASSEMBLY—**Bracket cracked, twisted, broken;** latch handle **busted, won't pivot;** plunger **missing,** split, burred; **spring missing,** weak, worn; cotter pin sheared, **missing;** hinges **broken,** loose, **missing;** U-bottom **staples missing, bent, broken.**

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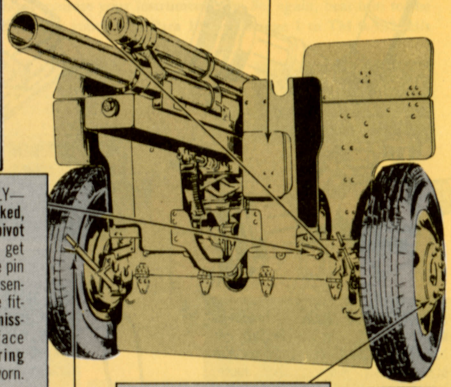

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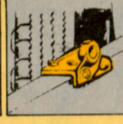
DRAWBAR LOCKING SHAFT ASSEMBLY—Lunette rusty, scored, burred; drawbar **twisted,** bushing worn, locking hole **cracked;** trail locking loop **busted;** nuts, bolts and cotter pins **loose, bent,** worn, **missing.**

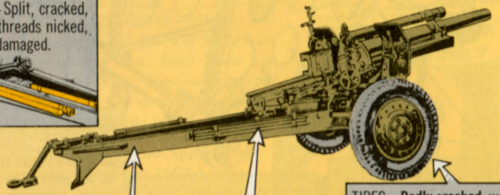
TRAIL LOCKING LATCH ASSEMBLY—Handle, hook or loop **busted;** rivets, bolts and nuts **missing,** loose, burred; **latch plunger won't work;** cam and finger hole **busted,** screws **missing,** loose.

TRAIL LOCKING PIN—**Bent, missing; chain busted,** too short, not fastened to trail bumper; no tension in spring (pin should snap into position).



TRAVELING LOCK BRACKET—**Brackets broken, loose;** bolts and nuts **missing,** worn; lock shaft piece **bent, broken; travel lock not adjusted right** (para 95a in TM 9-325 tells how to do it).

CLEANING STAFF SECTIONS—Split, cracked, **broken;** threads nicked, burred, damaged.



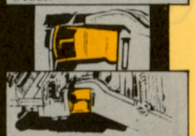
TIRES—**Badly cracked,** worn, wrong pressure (40 PSI is right); valve stem split, pinched; valve cap missing; nails, glass, etc., imbedded in rubber, stones wedged in treads.

AIMING POSTS—Bent, spring-loaded lock shot, rusty; ends painted over; parts won't fit together; red and white bands need painting.

HANDSPIKE — Split, splintered, **busted, missing.**

SPADES — Battered, twisted out of line, bent, burred.

TRAILS — **Won't spread or close properly;** hinge pin worn, loose, **cracked;** handrails **broken,** loose.



GIB BEARINGS—Rusty, painted. (Lift the trails one at a time for a better look.)

MORE

DRAWBAR LOCKING SHAFT ASSEMBLY —Lunette rusty, scored, burred; drawbar **twisted,** bushing worn, locking hole **cracked;** trail locking loop **busted;** nuts, bolts and cotter pins **loose, bent,** worn, **missing.**

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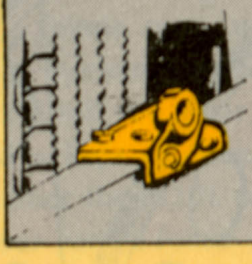

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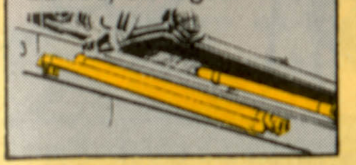

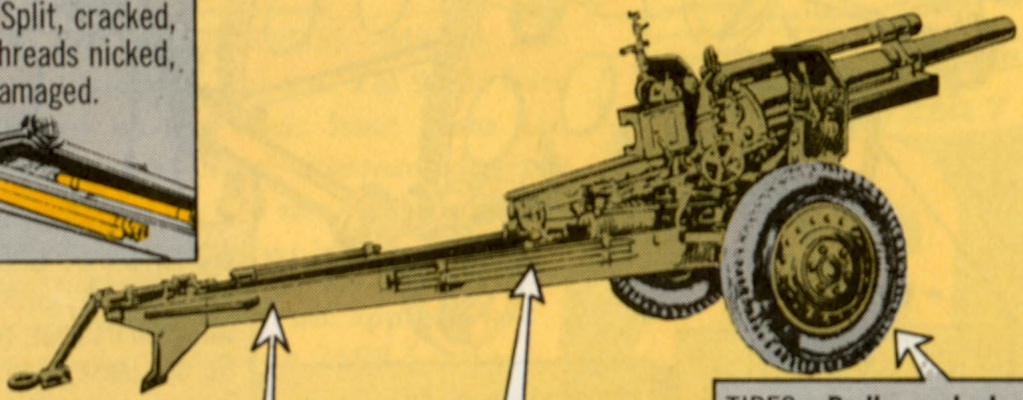

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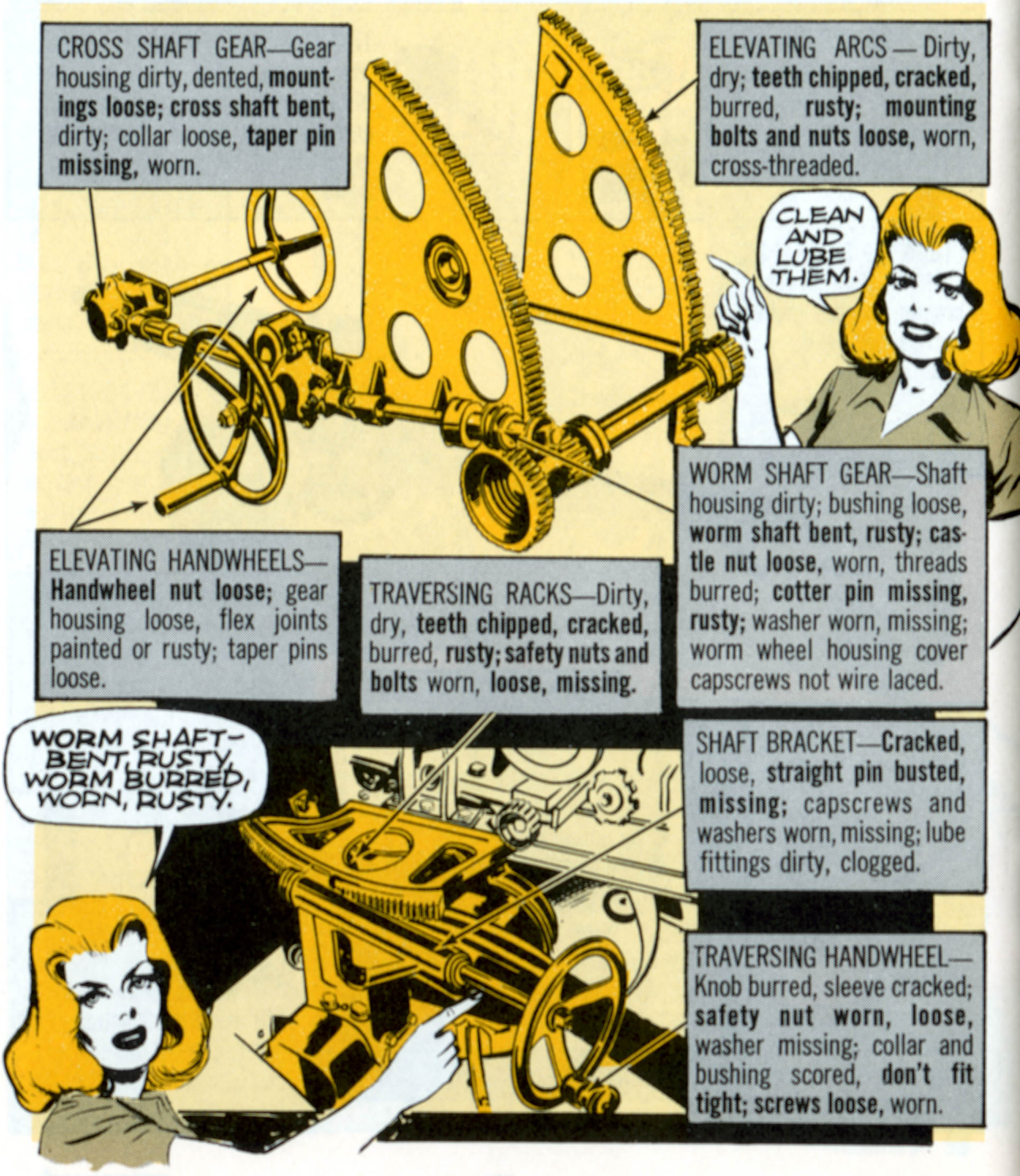
TRAILS — **Won't spread or close properly;** hinge pin worn, loose, **cracked;** handrails **broken,** loose.

GIB BEARINGS—Rusty, painted. (Lift the trails one at a time for a better look.)

MORE

ELEVATING AND TRAVERSING

Check the elevating and traversing handwheels for backlash. Any more than one-sixth of a wheel turn is too much. Turn 'em all the way clockwise and then all the way counter-clockwise. They should operate smoothly both ways. If you've gotta use force, it means some parts are binding or that the equilibrator needs adjusting.



ODDS 'N' ENDS

PUBLICATIONS—Missing, torn, unreadable, wrong ones. Here're the ones you should have: TM 9-325 (7 May 48) with 4 changes; TM 9-1015-203-20P (20 Mar 61) w/change; LO 9-325 (4 Nov 55); TB 9-325-8 (17 Feb 53); TB ORD 303 (27 Apr 55) w/change; TB ORD 586 (30 Apr 56) and TB ORD 605 (19 May 55) w/change.

FORMS—**Log book missing, forms** torn, **missing, made out wrong, incomplete.** TM 38-750 (May 62) w/change is your bible for all Army maintenance forms. Your log book index'll tell you what forms you should have, and the TM'll tell you how they should be kept up. Remember . . . the correct new nomenclature of your weapon is either the M101 or M101A1 105 towed howitzer and is reported as such on your record forms (M101 if it has a M2A1 carriage and M101A1 if it comes with a M2A2 carriage).

PARTS AND ACCESSORIES—Missing, broken, dirty. Changes 3 and 4 to TM 9-325 have the rundown on the Basic Issue Items List (BIIL) for your howitzer. Compare what you have against what the TM says you should have —and get those requisitions in.

MWO's—Missing; not applied; not recorded on DA Form 2408-5 in your log book.

MWO Number	Dated	Priority	Echelon	Purpose of Modification. . . .
C21-W17	20 Jul 50	N	3	Counterbore muzzle for safety.
C21-W18 C1	28 Feb 51 17 Sep 59	N	3	Relocate panoramic telescope case on shield to safeguard telescope.
C21-W19 C1	2 Nov 51 14 Oct 59	N	5	Provide telescope extension bracket to permit sighting over the shield.
C21-W20 C1	16 Feb 53 10 Nov 59	N	5	Install equilibrator and cradle-lock-strut piece lube points.
C21-W22 C1	7 Apr 55 10 Nov 59	N	5	Relocate setscrew on lower strut traveling latch body.
9-1015-203-20/1	27 Nov 59	N	2	Remove top left shield assembly to safeguard telescope mount.

END

AIR MOBILITY

RUB-A-DUB-DUB, YOUR BIRD'S IN THE TUB, FOR...

The next time you find yourself loaded down with buckets, mops, brushes, sponges, rags, hoses and cleaners, remember—washing a dirty bird is a mighty important piece of preventive maintenance.

A clean bird reduces in-flight drag, helps prevent corrosion, lets your favorite throttle jockey see where he's headed, and highlights leaks on malfunctioning equipment.

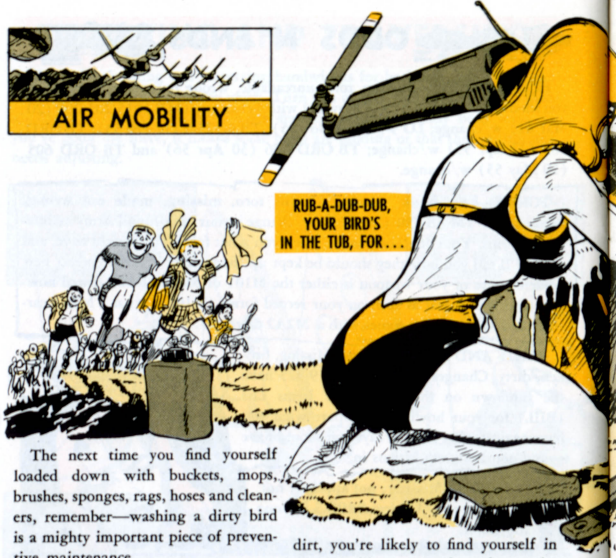
A good cleaning also reveals pin cracks in the skin hidden by dirt and grime, reveals strains and cracks in engine mounts by showing up broken and chipped paint hidden by grease, and those loose rivets and fasteners often overlooked in an eyeball going over.

Choose Your Weapons

When it comes to picking the cleaning compounds and solvents to battle dirt, you're likely to find yourself in the same dilemma as a dependent at the commissary—one thousand and one cleaners to choose from! But which one is right for the job? That's the rub.

Your best bet is to take a gander at the cleaning section of the maintenance manual for your bird, backed up by the cleaning poop in Chapter 1, Section II, of **TM 55-405-3** (10 May 62), **"Maintenance of Aircraft Systems."**

Cleaners called out in one manual may differ from another and you may even find it hard to lay your hands on some of the old types. But you can't go wrong if you use any of these approved cleaners.



PM CLEANING

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NOMENCLATURE	SPECIFICATION	FSN	SOURCE	USE ON
Cleaning Compound—Alkaline Waterbase	MIL-C-25769	7930-543-4552 (55-gal drum)	FSC C6-17-SL (1 Nov 62)	Exterior metal and fabric
Solvent, Dry-Cleaning	Fed Spec P-S-661	6850-264-9038 (Type 1, 5-gal pail) 6850-264-9037 (55-gal drum)	FSC C-6800-IL (1 Jul 63)	Exterior metal and fabric (with MIL-C-25769) Engine Electrical components Upholstery
Detergents, Nonionic	MIL-D-16791	7930-282-9699 (1 gal)	FSC C6-17-SL (1 Nov 62)	Transparent plastic (used with T-N-95) Upholstery
Cleaning and Polishing Compound, Transparent Plastic	MIL-C-18767 Type I	7930-634-5340 (1 pt bottle)	FSC C6-17-SL (1 Nov 62)	Transparent plastic (Interior and exterior)
Cornstarch (edible)	Fed Spec N-C-541	8920-160-6165 (1 lb carton)	FSC C-8900-SL (1 Jul 62)	Upholstery
Soap, Toilet, Powdered	Fed Spec P-S-626	8520-228-0985 (5 lb box)	FSC C6-19-SL (1 Oct 62)	Transparent plastic

MORE

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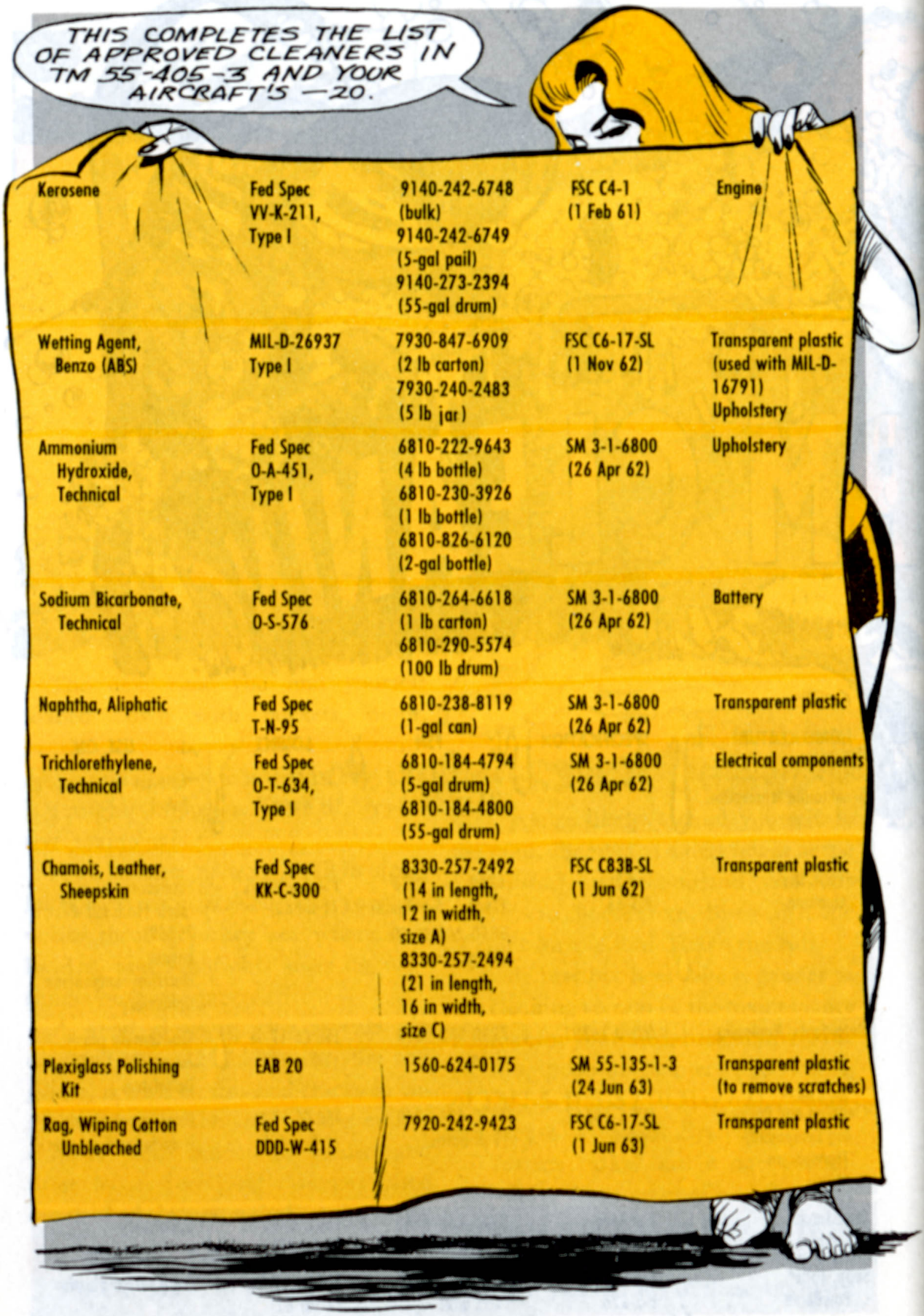


Kerosene	Fed Spec VV-K-211, Type I	9140-242-6748 (bulk) 9140-242-6749 (5-gal pail) 9140-273-2394 (55-gal drum)	FSC C4-1 (1 Feb 61)	Engine
Wetting Agent, Benzo (ABS)	MIL-D-26937 Type I	7930-847-6909 (2 lb carton) 7930-240-2483 (5 lb jar)	FSC C6-17-SL (1 Nov 62)	Transparent plastic (used with MIL-D-16791) Upholstery
Ammonium Hydroxide, Technical	Fed Spec O-A-451, Type I	6810-222-9643 (4 lb bottle) 6810-230-3926 (1 lb bottle) 6810-826-6120 (2-gal bottle)	SM 3-1-6800 (26 Apr 62)	Upholstery
Sodium Bicarbonate, Technical	Fed Spec O-S-576	6810-264-6618 (1 lb carton) 6810-290-5574 (100 lb drum)	SM 3-1-6800 (26 Apr 62)	Battery
Naphtha, Aliphatic	Fed Spec T-N-95	6810-238-8119 (1-gal can)	SM 3-1-6800 (26 Apr 62)	Transparent plastic
Trichlorethylene, Technical	Fed Spec O-T-634, Type I	6810-184-4794 (5-gal drum) 6810-184-4800 (55-gal drum)	SM 3-1-6800 (26 Apr 62)	Electrical components
Chamois, Leather, Sheepskin	Fed Spec KK-C-300	8330-257-2492 (14 in length, 12 in width, size A) 8330-257-2494 (21 in length, 16 in width, size C)	FSC C83B-SL (1 Jun 62)	Transparent plastic
Plexiglass Polishing Kit	EAB 20	1560-624-0175	SM 55-135-1-3 (24 Jun 63)	Transparent plastic (to remove scratches)
Rag, Wiping Cotton Unbleached	Fed Spec DDD-W-415	7920-242-9423	FSC C6-17-SL (1 Jun 63)	Transparent plastic

Dress Right

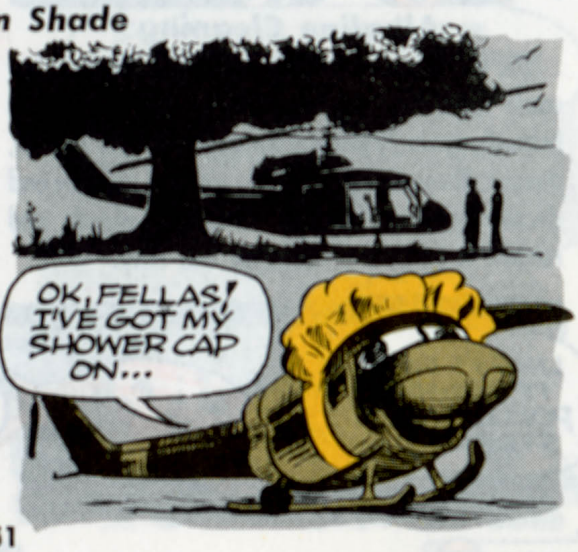
If you're about to wash indoors be sure there is plenty of ventilation. You don't want to be breathing solvent vapors whenever volatile chemical compounds and organic solvents are on the loose . . . 'tain't healthy. Even with good ventilation, you use a respirator.

'Course, washing inside or out, you always wear protective clothing and equipment, like rubber gloves, aprons, and some sort of eye protection. Last (but not least) you want suitable boots or shoes. Wet bird surfaces, maintenance stands, concrete—all these surfaces can be greased lightning under foot. That's why **AR 385-32** (12 Jul 62) and **TA 20-11** (5 May 61) give you the green light to order foot gear like the type listed in **Federal Supply Catalog C8430-SL.** On page 85 you'll find a shoe just made for wet conditions.

Depending on what size brogans you wear, there are 99 sizes, running from **FSN 8430-753-5635** through **8430-753-5757.** The shoe description goes like so: Shoe, safety, plain toe design, high top, blucher style, steel box toe, leather black upper, nonmarking, oil resistant neoprene and cork sole and heel, mildew resistant treated.

Wash In Shade

But before you make with the soapsuds, try to time your wash job so that the sun isn't beating down on the wash rack. You've got it made if you park your bird in the shade. Of course if you can't find shade, your best bet is to wet the bird down to cool the surfaces and protect the paint finish.



Next, hook up a ground cable and close all access panels, covers and hatches. Depending on what bird you're grooming, you want to use all the bird plugs and covers available to protect

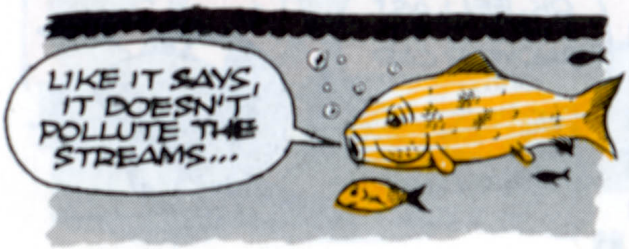
MORE

areas where you don't want moisture entering. Masking tape works great in protecting magnesium wheels, piston cavities, and related brake parts, actuators, switches, and other moisture sensitive equipment.

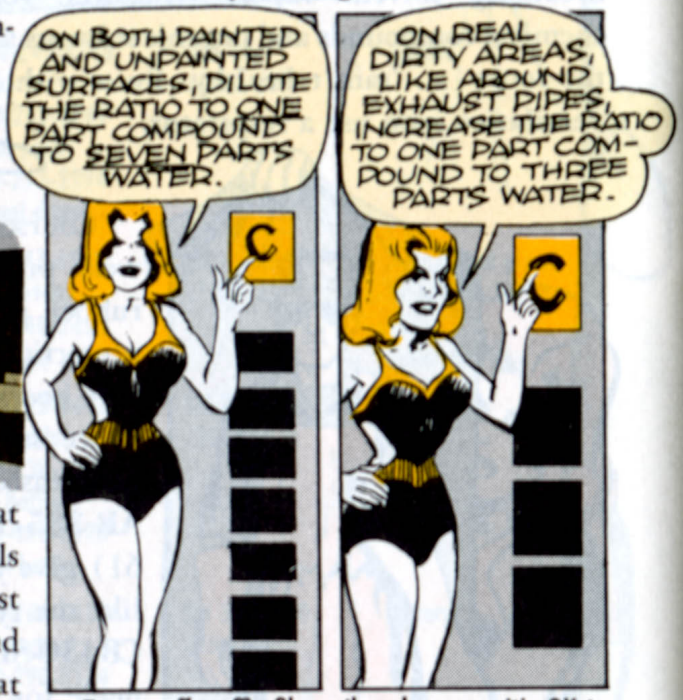
When spraying, don't aim directly at areas such as propeller blades, hub seals and engine accessories. A direct blast tends to force the cleaner past seals and into bearings and such. You know what a revoltin' development that can be—contamination and corrosion of vital parts and all that sort of stuff.

Alkaline Cleaning

The waterbase alkaline cleaner is the best because you don't have any toxicity and flammability hazards, it won't pollute streams from the run-off, doesn't discolor or soften most painted surfaces and decals, has less harmful effects on plastic and rubber, goes on and rinses off real easy.



The Compound, **MIL-C-25769,** is already in liquid form, but you can vary the strength for use on different aircraft areas by adding clear water.



To get off traffic film, oil and grease, it's OK to go all out and use the compound full strength.

One of the best ways to apply the compound in hard to get at places is to spray it on. Of course in open areas there's nothing like the rag-elbow grease combination to cover ground.

But use only enough to cover the area you're working on. Don't let the cleaner dry on the surface before rinsing, either. Otherwise it'll lose its punch.

It's a sure bet that if this compound dissolves grease it's not going to do lubricated parts any good and it's also sure to feed on rubber (especially the

full strength juice). So be sure you keep the compound **away** from **lubricated parts** like exposed flap and control surface actuators, bearings; keep out of louvers, scoops and other pockets, and don't let it come in contact with plastic canopies, windows and rubber components.

Let the compound stay on the surface being cleaned for from five to ten minutes, scrubbing really dirty places with a mop or brush, if need be. Then rinse the area with water heated to 120-140 degrees fahrenheit. Cold water will also do, if you can't get the heated type!

If your bird's been out in the boondocks and looks like something the cat dragged in, you might have to give 'er the ol' college try—if at first you don't succeed, wash, wash, again . . . using the compound full strength. You can use a brush on those areas that take a real beating.

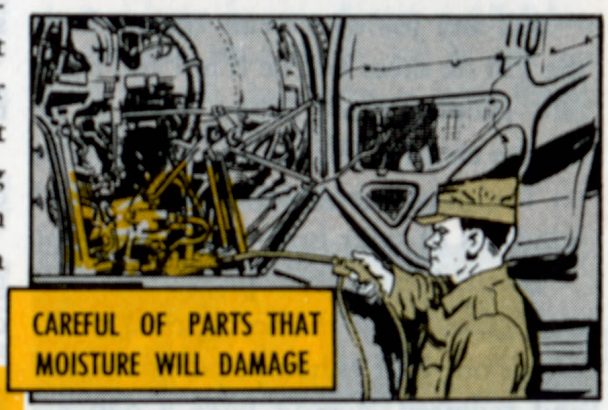
Clean The Engine

'Tis mighty important that you also clean the engine in your bird. If there are any broken seals, O-rings, gaskets, or loose hose connections, a leak can be easily spotted on the next Daily—before a system blows out in flight and it's too late to do anything about it.

So, if you don't want to leave your bird high and dry, be sure you use either **Dry-Cleaning Solvent, Federal Specification P-S-661,** or **Kerosene, Federal Specification VV-K-211,** on the power plant.

Clean the engine by spraying on the solvent. Let it stay on the engine five to ten minutes to loosen the dirt and then rinse it off with more solvent. Use

compressed air to dry the engine. Be especially careful not to spray generators, starters, actuators, switches and relays since these parts can be damaged by moisture.



Eye The Battery

If not cleaned regularly, any battery will form acids that should be cleaned off before they eat into the battery case, cables and the airframe.

MORE

So remove the battery from the aircraft and treat the areas affected by the acid with **Sodium Bicarbonate, Technical, Federal Specification O-S-576,** using a rag or brush to apply it. Add the solution until the bubbles it produces, stop. Let the solution stay for about five minutes and wash the area thoroughly with clear water.

After you wipe the battery and adjacent area dry, paint the area affected with acid resistant paint, TT-L-54, FSN 8010-290-6158.

Clean Clear Through

Ask any Joe who wears specs what's the PM on them and he'll tell you right off—keeping those babies clean, so he can see clearly. The same principle goes on the plastic bubbles, canopies, and windows of your bird—only more so!

Yessir! Transparent plastic has it all over glass. It has the best optical qualities, is one-half as heavy, can be formed and repaired, doesn't have a dangerous shattering tendency, and is a lot cheaper.

With all these advantages all that's needed to keep it in good shape is a little extra cleaning care to guard against scratches and crazing.

When picking a cleaner for the plastic, don't reach for gasoline, alcohol, benzene, kerosene, carbon tetrachloride (or any other solvent). They can cloud the plastic once and for all.

Normally the only cleaner you use on transparent plastic is a mild soap, such as Specification P-S-626, and clean water.

Also, before you make with the big hand motions, be sure you don't have any rings on your fingers. They can scratch the plastic, but good.

For that plastic you like to touch try these cleaning steps.

First off, use compressed air to blow off the loose dust and grit.

Next, play your water hose on the plastic and use your bare hands to locate and peel off dirt, salt and mud.

Then make with the soap suds, using a soft cloth, sponge or chamois to carry the soapy water to the plastic. No rubbing please—the soap will loosen the dirt and you can then wash it off with water.

Dry the plastic with a clean, damp chamois. You can also use a soft, clean damp cloth or tissue. Just be sure you **don't rub** the plastic after it's dry. And you **never, never** rub plastic with a dry cloth, chamois, or anything else. It doesn't take much rubbing to make a plastic windshield look like somebody went over it with sandpaper. There's always a certain amount of grit on the windshield. And with dry rubbing—well . . . there's your sandpaper!

Dry rubbing plastic can also build up an electrostatic charge that attracts dust right back on the plastic. If this should happen, you can get rid of the charge and the collected dust, by gently patting or blotting the plastic with a damp chamois.

If you should run into some stubborn oil and grease that you can't get off with mild soap, use a soft cloth wet with **Aliphatic Naptha, Federal Specification T-N-95.** Keep in mind that naptha is very flammable so be certain your bird is in the open air when you use it. And no smoking, please! After the naptha treatment, make with the soap suds once more and rinse with water.

Another way to rid your bird of stubborn traffic film is to use a solution of **Nonionic Detergent, MIL-D-16791,** and a **Wetting Agent, Type I Benzo, MIL-D-26937,** forty per cent active. Mix one to two ounces of these materials per gallon of water and put the solution on with a soft cloth or photographic cellulose sponge. Finish up with soap and water.

After your cleaning, eye the plastic for any old scratches. You can take minor ones out by using **Plexiglass Polishing Kit, FSN 1560-624-0175.**

To carry the plastic cleaning bit further, you can do it up brown by using **Cleaner and Polisher, Specification MIL-C-18767.** Just be sure you polish with soft, clean canton or outing flannel, flannelette or diaper cloth.

Clean Plastic on Inside

Sometimes it seems canopies, windshields—and the like—are dirtier on the inside than on the outside!

How important is cleaning the plastic on the inside of your bird? Well, put yourself in the place of the aviator taking off at dusk toward a disappearing horizon. The few lights that give him a hint about his altitude might never be seen because of a dirty, filmed-up windshield!

25 MORE

To get rid of loose dirt, dust the plastic with a clean, soft cloth or sponge wet with water. Be sure to rinse the cloth or sponge often in clean water to keep it free of grit. Then, for that clean-clear-through look (and to remove film) finish up with **Cleaner and Polisher, Specification MIL-C-18767.**

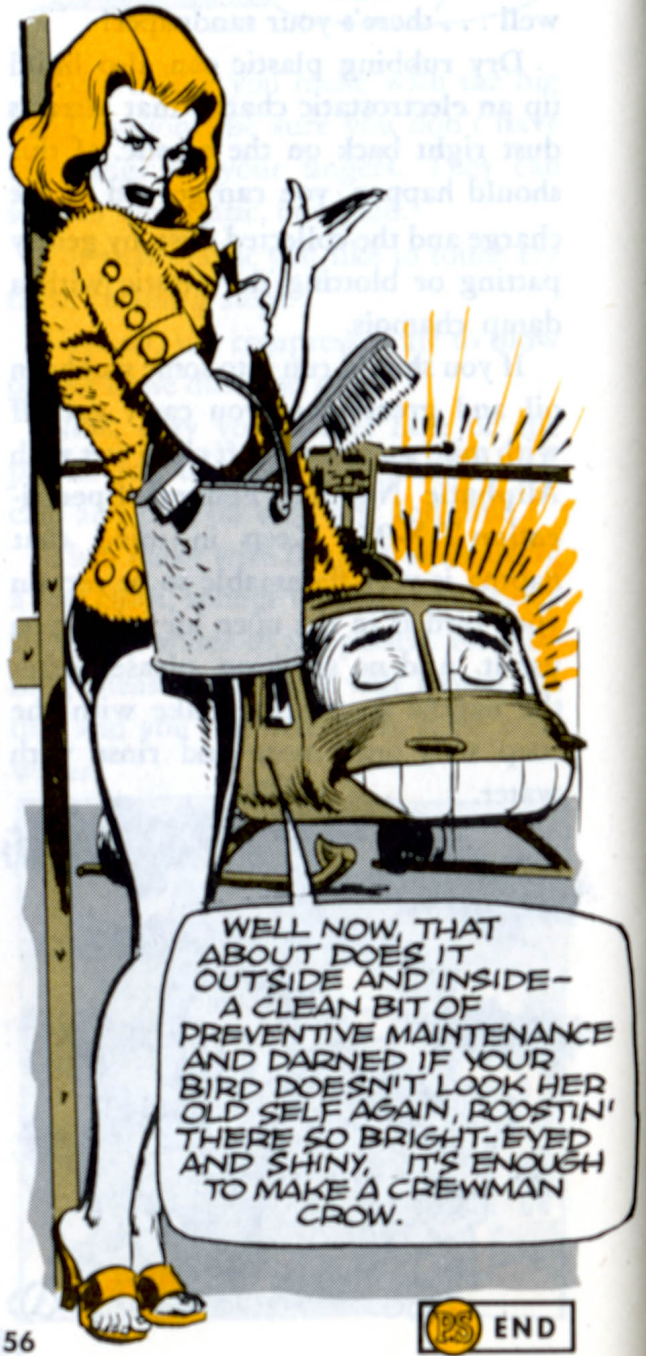
Clean Bird Interior

Hear the one about the Mohawk (OV-1) pilot who went through some evasive maneuvers on a mission? Everything went well until the slow roll. Then cigarette butts, empty cigarette packages, matches, and dirt showered down on our hero . . . had to go on instruments! His comment after landing—"(*d#(&%i/'&X* (censored)."

For cleaning the inside of your bird the vacuum cleaner in your A, A Supplemental, B and C Organizational Tool Kits, can save you a lot of elbow grease.

You can clean the upholstery and interior fabric with a solution of one ounce of detergent orvus, or **Detergent, MIL-D-16791, Synthetic, Nonionic** (alkyl benzene sulfonate) per gallon of water. A sponge wet with the detergent will loosen most of the dirt. Some extra suds and a little rubbing may be needed for extra dirty spots. Then go over the soaped area with a wet soapless cloth and let the upholstery dry. A light brushing should restore the nap.

Now, if you come across any grease spots, use **Dry-Cleaning Solvent, P-S-661.** For other stains try a watered sponge, first off. You can usually remove any residue by using a ten percent solution of **Ammonium Hydroxide, Federal Specification O-A-451,** or a paste of **Cornstarch, Federal Specification N-C-541.** After the area is dry, brush any cleaning material off the fabric.



PS END

DAT-A DILEMMA

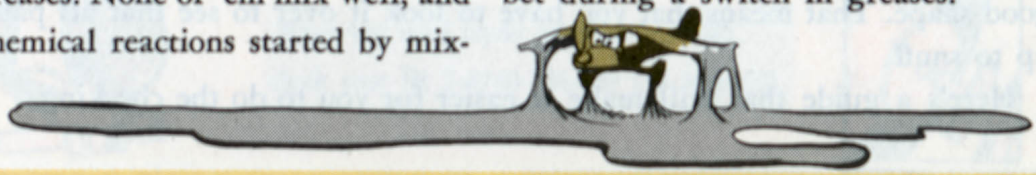
If two data plates on the tail rotor hub have you Iroquois (UH-1A) types in a dilemma as to which one to list on the TM 38-750 oriented forms, focus an eyeball on the hub assembly number—that's the baby called out in TM 55-1520-211-20P. Depot support keeps the records on the time change yoke sub-assembly.

AIRCRAFT TOOLS

There's a new SM for those of you that do organizational maintenance on Army aircraft. It's SM 55-4-5180-A08 (28 Nov 62), and it takes the place of SM 9-4-5180-A05. It covers Sets A, A(Supplemental), B and C.

DON'T MIX GREASES

A little carelessness will go a long way toward fouling up your aircraft's lubrication system when you're changing greases. None of 'em mix well, and the chemical reactions started by mixing some greases can cause severe corrosion of critical parts. A thorough purging of each fitting is the only sure bet during a switch in greases.

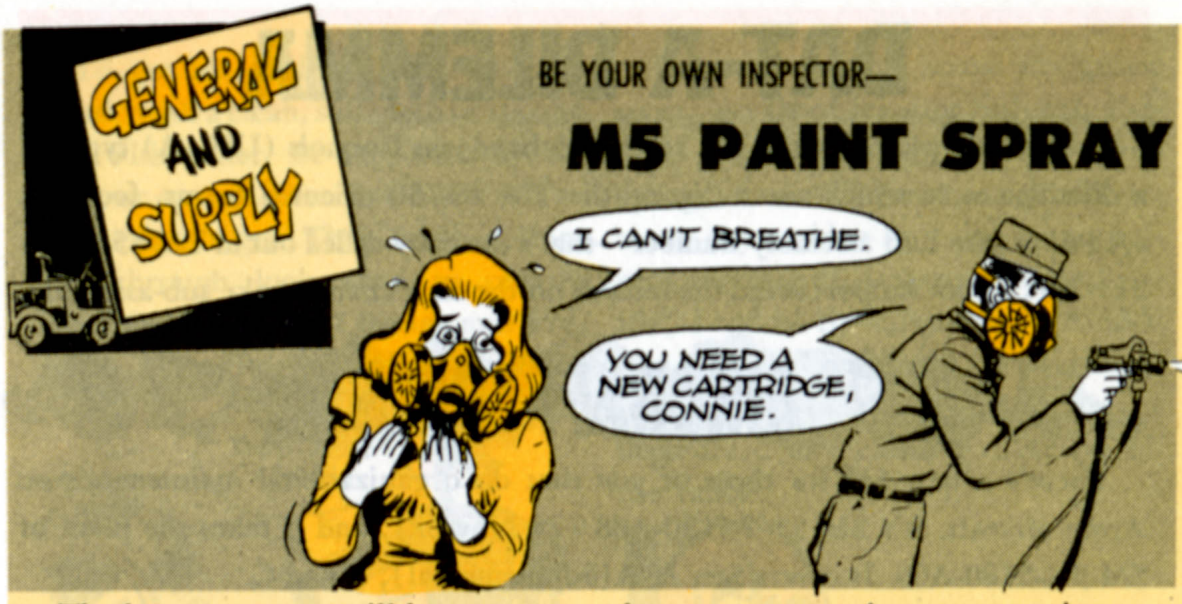


"ALL TOGETHER NOW..."

You say your aircraft manual is not up to snuff? OK, then—why not help to update it with a DA Form 2028, thru channels, to: Headquarters, U. S. Army Aviation and Surface Materiel Command, ATTN: SMOSM-M, 12th & Spruce Streets, St. Louis, Missouri. All together now, 1—2—3 . . . write!

SHIP AS IS

Any time you air types ship a bum bird part back to Aviation and Surface Materiel Command for study, remember to send it as is. Cleaning up and polishing a part can remove valuable evidence. Like a detective trackin' down the villain, a bird engineer wants the clues, man . . . ALL the clues.



The lungs you save will be your own when you use a paint spray respirator. There's no use in taking a chance on getting a snoot full of paint which eventually finds its way to your lungs when the M5 paint spray respirator is so easy to use.

You don't have to wear your M5 when you're doing all types of painting—just spray painting where you don't have enough ventilation. There's another thing to bear in mind and that is the M5 is not to be used in place of an air-line respirator when you have to paint in confined spaces.

You know that your paint spray respirator won't help unless you keep it in good shape. That means that you have to look it over to see that all parts are up to snuff.

Here's a guide that will make it easier for you to do the checking.

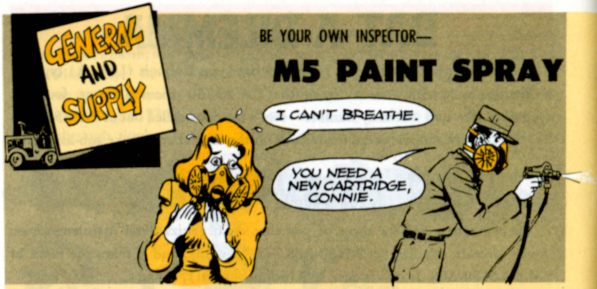
It's no fun to lose your skin whether it's with a busted knuckle or an overdose of sunburn.

There's another way of losing your skin, and that's to let metal come in contact with your bare skin in freezing temperatures.

You say you know better than that. But have you thought about those snap fastener caps on your M9A1 field protective masks? They can get mighty cold in freezing weather if you don't have your mask winterized with an M1 kit.

Just to play it safe, cover those snap fastener caps with insulating tape, moleskin, or any tape that'll stick to the metal.

The piece of tape should be just big enough to cover the head of the snap fastener.



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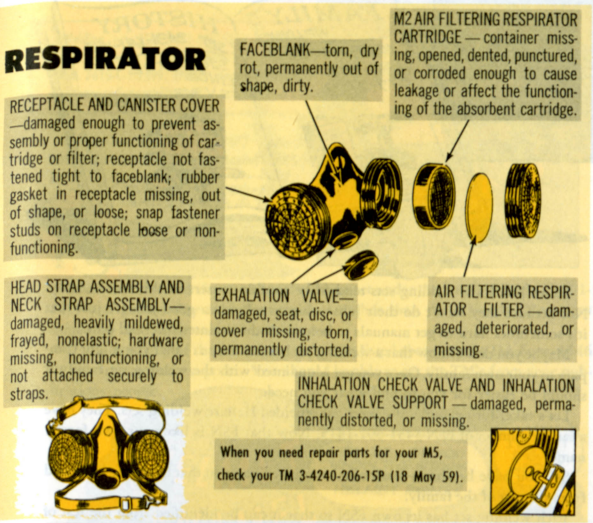


Latest flash from the mask people says that the best way to protect the outserts of your M17 field mask from breaking is to put 'em on the masks for keeps. That is, you can make the outserts a permanent part of the mask. That way they'll not be loose in the carrier and they'll not get lost or broken so easily.

Just clean the mask's lenses and outserts (para 10, page 12, TM 3-4240-202-15) and carefully stretch the outserts over the eyerings.

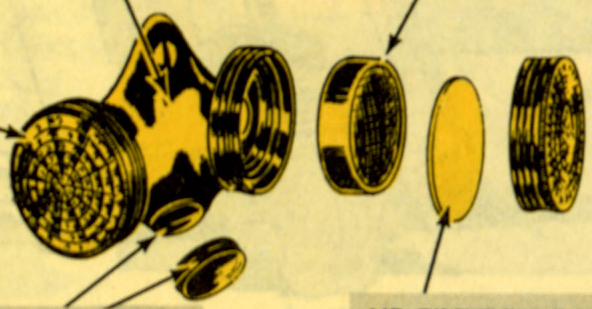
Once you put the outserts on your M17 they can stay on . . . except for cleaning, inspection and the like. Using the outserts this way will also keep the eyelenses from getting scarred or broken while the mask's in the carrier.

RESPIRATOR

FACEBLANK—torn, dry rot, permanently out of shape, dirty.

M2 AIR FILTERING RESPIRATOR CARTRIDGE — container missing, opened, dented, punctured, or corroded enough to cause leakage or affect the functioning of the absorbent cartridge.

RECEPTACLE AND CANISTER COVER —damaged enough to prevent assembly or proper functioning of cartridge or filter; receptacle not fastened tight to faceblank; rubber gasket in receptacle missing, out of shape, or loose; snap fastener studs on receptacle loose or nonfunctioning.



HEAD STRAP ASSEMBLY AND NECK STRAP ASSEMBLY—damaged, heavily mildewed, frayed, nonelastic; hardware missing, nonfunctioning, or not attached securely to straps.

EXHALATION VALVE—damaged, seat, disc, or cover missing, torn, permanently distorted.

AIR FILTERING RESPIRATOR FILTER — damaged, deteriorated, or missing.

INHALATION CHECK VALVE AND INHALATION CHECK VALVE SUPPORT — damaged, permanently distorted, or missing.

When you need repair parts for your M5, check your TM 3-4240-206-15P (18 May 59).

WEAR YOUR OUTSERTS

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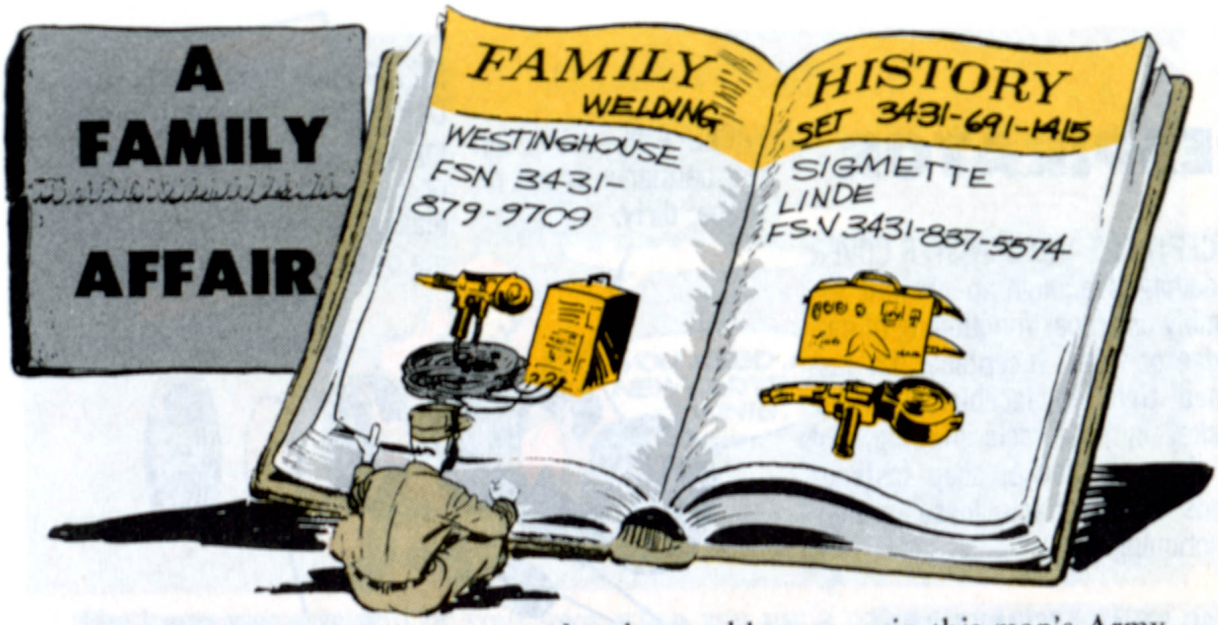


Seems like some welding sets tend to be trouble-causers in this man's Army. Not because they won't do their jobs—they usually do a good job. It's just that it's sometimes hard to get manuals to help with the maintenance and parts.

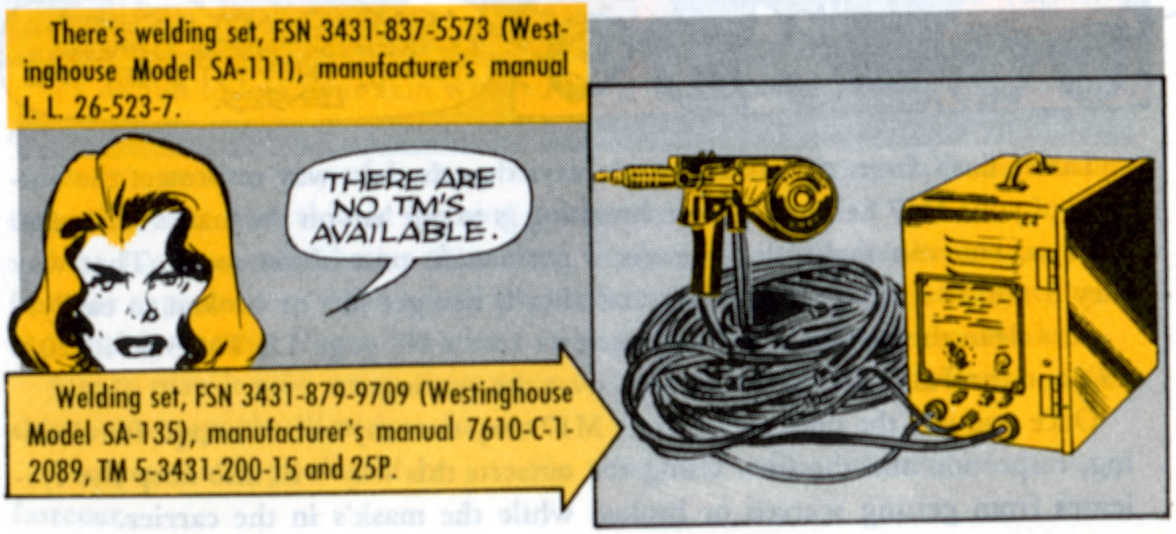
Maybe you don't know that a welding set has a family . . . that you might compare to your own family. Once you get acquainted with the welding set family it should be easier for you to find what you need.

Let's take, for example, the inert gas shielded Heliarc welding sets. They have a family number of FSN 3431-691-1415. Now that FSN is like your own family name.

Say you have brothers—each one has a given name so that he can be identified from the rest of the family.

Each welding set has its own FSN so that it can be identified from the rest of the family.

Now let's see how large a family FSN 3431-691-1415 has, with the publications available for each set:

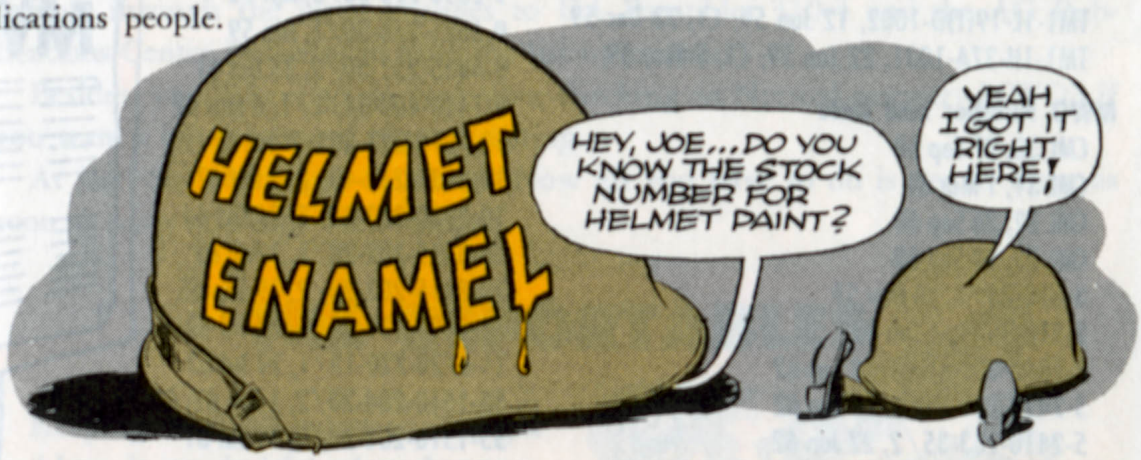


Welding set, FSN 3431-837-5574 (Linde Co. Model "Sigmette"), manufacturer's manual and PMSM 7610-C-1-2499. (PMSM means Preliminary Maintenance Support Manual.)

Welding set, FSN 3431-972-7672 (Linde Co. Model SWM 9-A), manufacturer's manual 7610-C-1-2210.

Don't be surprised if you order a welding set under the family FSN 3431-691-1415 and get another manufacturer's set (other than those listed). New ones come into the family and old ones die out.

If you need any of the manufacturer's pubs listed above, send a DA Form 1546 to your repair parts support. You should be able to get the TM's from your publications people.



Your little black book helps you keep a lot of handy info at your finger tips. Maybe you even keep vital statistics for each entry.

There's other important info that you should have at your finger tips. Maybe you won't need to write it in a black book, but you'll want to keep it where you can find it.

For instance, you'll want to remember this little number—FSN 8010-753-4960. That'll get you a quart of green lusterless enamel, Fed Spec TT-E-527, Class A, for painting your steel helmet.

The primer coating, Fed Spec TT-P-636, for the helmets comes in a gallon can and you ask for FSN 8010-161-7425.

If your M1 helmet liner or combat crewman's helmet needs painting, then you'll want this number handy—FSN 8010-753-4957. It will get you a quart of green lusterless enamel. Spec MIL-E-2052, Class A.

WHAT'S CURRENT IN MWO'S AND TCTM'S, OR—

CLEARING THE

It was reaching a point where sprinkling the ground with outstanding MWO's was just as effective as laying a minefield . . . until somebody decided that MWO's were not to be used as aggressor force anti-maintenance weapons.

So a path was cleared through the MWO minefield by a team of engineers who reclassified a lot of Urgent type MWO's to Normal category and just plain cut off a mess of both types with a rescission tool (no FSN available).

For example, here's what is left in the old Urgent list—

TCTM Number and Date

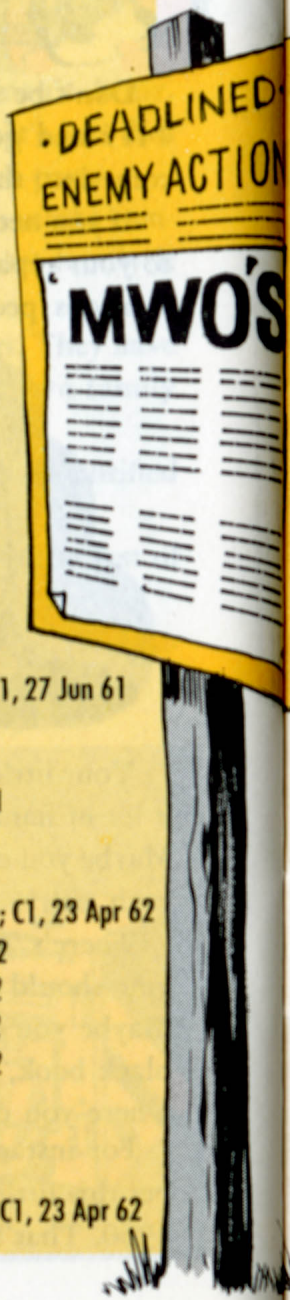
TM1-1H-37-1007, 5 May 61; C2, 29 May 62
TM1-1H-37A-1034, 15 Dec 59; C1, 28 Apr 60
TM1-1L-19-1005, 16 Jul 58; C1, 23 Jun 59
TM1-2R-R1300-502, 16 May 58; Supplement, TM1-2R-R1300-502A, 24 Nov 58
TM1-1L-19(T)D-1002, 12 Jun 59; C1, 23 Dec 59
TM1-1H-37A-1031, 22 Jan 59; C1, 5 May 59

MWO Number and Date

CML 30, 27 Sep 60
CML 31, 1 Mar 61
CML 32, 26 Sep 60
CML 33, 28 Sep 60
3-310-25/1, 16 Nov 59
3-310-35/1, 1 Jun 62
3-1040-206-45/3, 18 Sep 62
5-2410-200-35/1, 10 Jan 62
5-2410-203-35/2, 22 Jan 62
5-2410-204-35/1, 28 Mar 61
5-2410-205-35/1, 10 Jan 62
5-3805-212-35/1, 25 Jul 62
5-4210-202-35/1, 8 Sep 61
5-4210-202-35/2, 2 Jan 62
5-4610-202-35/1, 8 Sep 61
5-5274-1, 25 Feb 57
5-6115-213-35/2, 30 Aug 61
5-6115-230-35/1, 17 Nov 59
5-8120-201-35/1, 15 Mar 61
5-9100-1, 13 Oct 60
5-9100-2, 28 Oct 61
5-9157-1, 29 Sep 58

MWO Number and Date

5-9818-3, 26 Feb 57
5-9950-1, 9 Mar 61
9-2300-217-30, 14 Nov 61
F 293-W2, 30 Nov 54; C1, Jul 59
9-2300-249-10, Jun 61
9-2350-215-20/8, Apr 62
9-6625-214-30/1, Jun 59
9-4935-251-30/2, 25 Oct 61
9-1410-400-34/2/1, 6 Mar 62
10-1670-227-201, 7 Dec 62
10-3930-212-40/2, 3 Oct 62
10-3930-223-30/3, 24 Oct 61
10-8415-202-20/1, 7 Feb 62
10-8415-202-30/2, 19 Sep 62
11-6720-219-45/1, 20 Jul 62
11-6720-220-13/1, 24 Jul 62
55-1510-204-20/2, 1 Jun 61; C1, 27 Jun 61
55-1510-204-20/5, 19 Jul 61
55-1510-204-34/9, 12 May 61
55-1510-204-34/31, 21 Nov 61
55-1510-206-34/2, 27 Sep 61
55-1510-206-34/3, 8 May 62
55-1520-207-34/35, 27 Oct 61; C1, 23 Apr 62
55-1520-207-34/52, 29 May 62
55-1510-204-34/43, 27 Apr 62
55-1510-204-34/41, 27 Apr 62
55-1510-204-34/43, 27 Apr 62
55-1510-204-34/44, 4 May 62
55-1520-204-20/1, 30 Dec 60
55-1520-204-20/2, 19 Jan 61
55-1520-208-34/3, 30 Oct 61; C1, 23 Apr 62



WHAT'S CURRENT IN MWO'S AND TCTM'S, OR—

CLEARING THE DEADLINE REPORT

It was reaching a point where sprinkling the ground with outstanding MWO's was just as effective as laying a minefield . . . until somebody decided that MWO's were not to be used as aggressor force anti-maintenance weapons.

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For example, here's what **is left in** the old **Urgent** list—

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55-1510-204-34/43, 27 Apr 62
55-1510-204-34/41, 27 Apr 62
55-1510-204-34/43, 27 Apr 62
55-1510-204-34/44, 4 May 62
55-1520-204-20/1, 30 Dec 60
55-1520-204-20/2, 19 Jan 61
55-1520-208-34/3, 30 Oct 61; C1, 23 Apr 62

If you've got a yen to know what happened to the rest of the older MWO's, check out the DA Circular 310-series for the official reclassification and rescission actions by MWO number.

But if you'd like the luxury of taking the PS word on this list, you'd better be clued in that since the list only covers Urgent MWO's up to now, you'll have to ramble through the latest changes to DA Pamphlet 310-4 and the AG Publications Center Bulletins to keep the list up to date.

Besides, you'll have to do your own checking on Normal category MWO's if you want a **complete** and **current** listing.

At last! Somebody got the word! Now all you have to do is get to them as soon as parts and time are available.

THE REPORTABLES

Keeping track of what you've got and how it stands (the selected reportable items, that is) is now per procedures set up in AR 711-5 (Mar 63) "Stock Control Army Supply Status Reporting System Unit, Organization or Activity Equipment Status Reporting." It supersedes AR 711-18 (23 Aug 62) and the part on reporting (CONUS) in AR 711-20 (27 Jul 60).

If you're a property-book keeper, best be on the look-out for its implementation in your command.

DEADLINE REPORT

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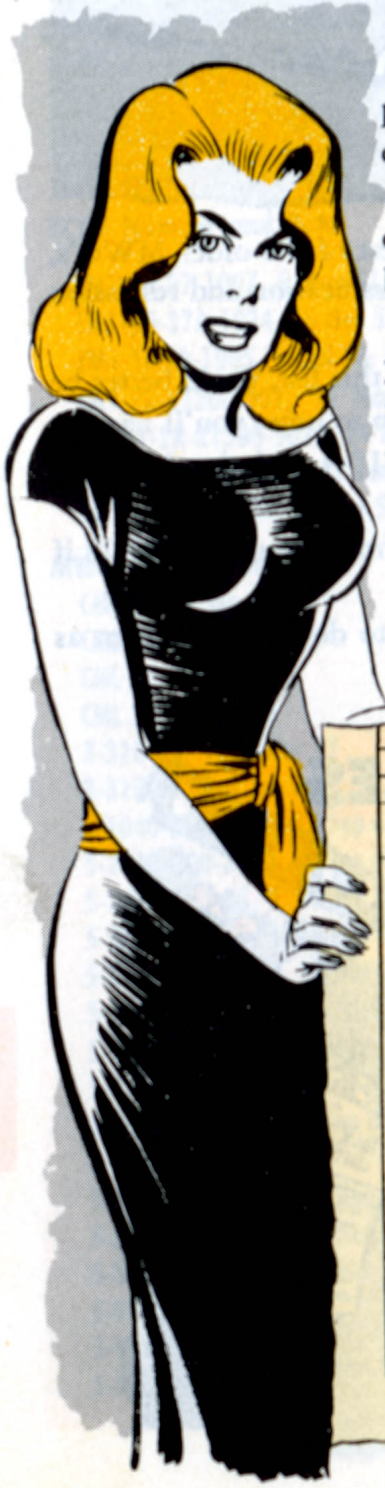
GOT AN IDEA...? PROBLEM...?

ON OPERATING OR MAINTAINING YOUR ARMY EQUIPMENT?



Then, just fill out DA Form 2407 (Equipment Improvement Recommendation—EIR) soonest . . . or earlier.

Put down all the information about what goes wrong, or any ideas you have for making the equipment operate better.

This is your chance to be a design engineer. You give your idea, no matter how little or big, to the man behind the drawing board. He then checks it out, and, maybe, one day your idea may come out as a modification, as a change in newly manufactured equipment or in new design equipment.

The DA Form 2407 is your messageform to the equipment designer. Let him have the word from you—direct by mail.

III EQUIPMENT IMPROVEMENT RECOMMENDATION (EIR)

☐ EMERGENCY ☐ URGENT ☐ ROUTINE

29. ☐ NORMAL REPLACEMENT

30. FAILED OR DEFECTIVE PART FSN

31. RECOMMENDATION

a. ☐ IMPROVE DESIGN b. ☐ MODIFY c. ☐ REVISE PROCEDURE d. ☐ OTHER (Specify)

32. OPINION OR REMARKS (Relate to block selected. Describe conditions under which failure occurred. Attach photos or sketches, if available.)

33. SIGNATURE 34. ORGANIZATION 35. CONTROL NUMBER

DA FORM 2407, 1 APR 62 MAINTENAN (TM 3

Connie Rodd's BRIEFS

HOT NEWS

WATCH 132 NEXT MONTH FOR A **SPECIAL FEATURE** ON THE NEW RADIOS VRC-12 PRC-25

ON THE LEE SIDE

It's available now—TM 10-8340-203-24P—the publication that you Hawk outfits have been waiting on for a long time. The TM shows repair parts and special tool lists for your all-weather shelters. It's dated December 1962.

EASY DOES IT

Any tanker will admit pulling a broken torsion bar on an M48 is no bed of roses. So you wouldn't want to make it even tougher by driving in a replacement bar and damaging the threads in the anchor plug's soft metal. Your work would really be cut out for you next time. No muscle power needed when you line up the splines proper-like . . . as TM 9-7012 (30 Aug 54), tells you on page 370.

TUBELESS TIRE REPAIR KIT

Need a repair kit for your tubeless tires? If so, then try FSN 2640-600-7127, Repair Kit, Tubeless Tire on your next requisition form. The kit costs $19.80 and is listed on page 47 (Index 2314) in Federal Supply Catalog C26A-ML (Jul 63). The dope covering organizational maintenance and repair of tubeless tires is in TB Ord 645 and its Change 1.

THE OLDER PS ISSUES

The cupboard is just about bare—so you PS fans, who are in need of back issues, best get 'em while the getting is good. The only back issues available at this time are these: 1, 3, 5, 6, 14, 18, 19, 20, 21, 56, 58, 59, 61, 85, 95, 99, 101, 102, 103, 109, 110, 111, 112, 113, 114, 116, 117, 118, 119, 121, 123, 124, 125, 126, 127, 128, 129 and 130.

Like always, a short note to Connie or Half-Mast with your requests, will do the trick.

Would You Stake Your Life right now on the Condition of Your Equipment?

ONE OUT OF THREE...

NEEDLESSLY

CHANCES ARE THAT ONE OUT OF EVERY THREE ELECTRON TUBES YOU DISCARD IS STILL CAPABLE OF DOING ITS JOB.

YOU CAN HELP STOP THIS PULSE WEAKENING WASTE BY:

Testing and pre-testing with accurate equipment

Using your TM troubleshooting procedure

Being sure it's a tube problem in the first place

Exchanging only one tube at a time and then testing

Substituting only the number of tubes necessary